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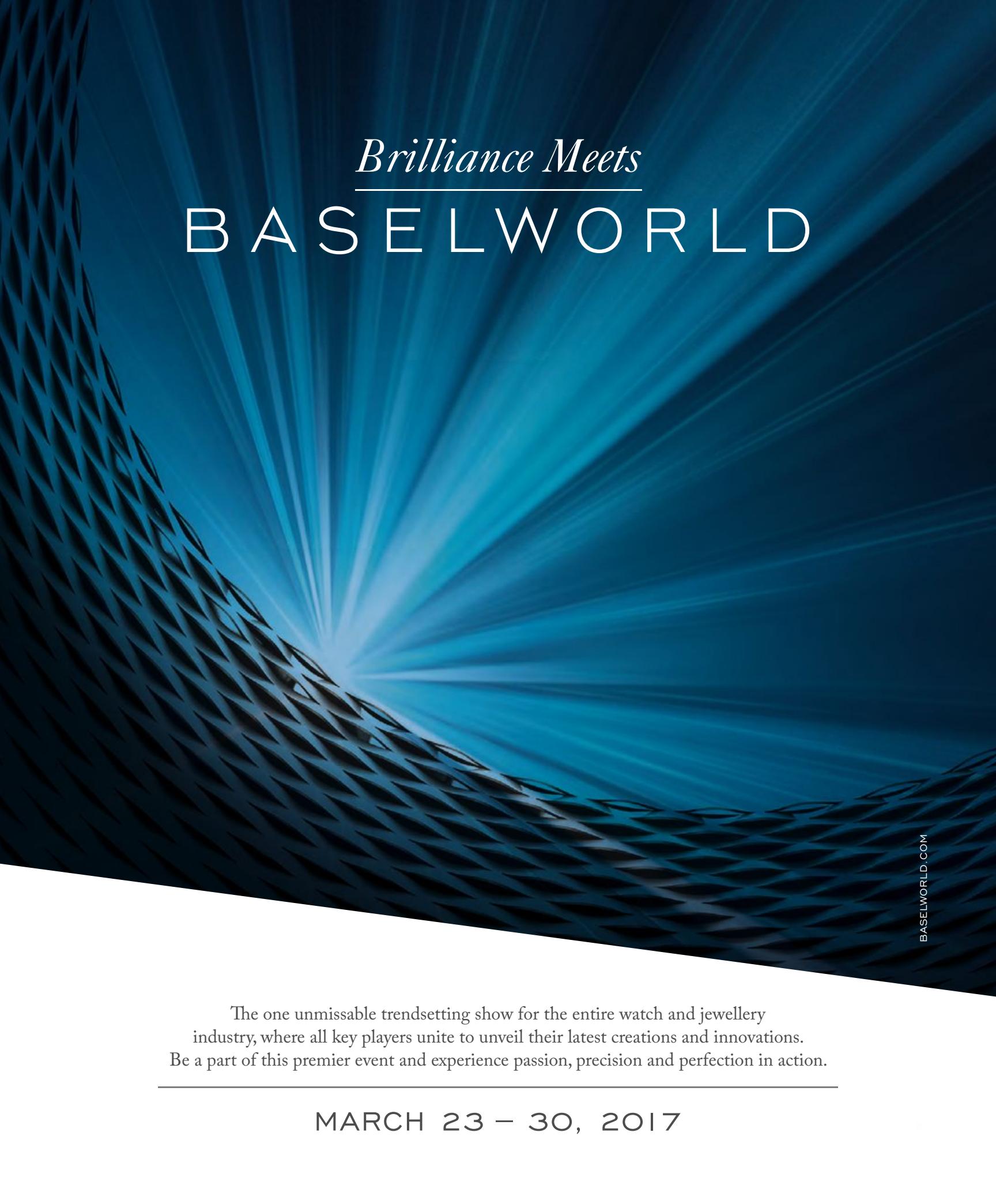
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WatchTime
THE WORLD OF FINE WATCHES



The New Old School

If I had a dollar for every time I heard that print is dead, I would be sitting on a yacht in the British Virgin Islands sipping on a rum punch while admiring a shiny new time-piece on my wrist. But, alas, here I am in rainy New York City. I guess I have you all to thank for that!

All joking aside, if it were not for the support of our loyal readers and advertisers, we might not be surviving these turbulent times in the watch and publishing industries. It is no secret that 2016 has been difficult for a multitude of reasons and I am not saying that we are out of the woods, but I feel it is important to express gratitude to all who keep us afloat.

For those of you who might be new to WatchTime, here's a little bit about us. WatchTime is part of a family-owned, German publishing company, Ebner Verlag, which has been in the publishing and media business for almost 200 years. WatchTime started out with only print in 1999 and we are now a multi-channel media brand. Today, print remains our flagship product and serves as the nucleus for other offshoots like a healthy digital platform, www.watchtime.com; social channels with large followings on all major social media platforms; an ever-growing event business with WatchTime New York, our annual two-day collector event; and a successful small event business with new event concepts like our recent collector event in Miami's Design District featuring 11 watch boutiques. We are also purveyors of custom publishing and are looking to grow with new channels.

A little about me: I am a 30-something female who is too old to be a millennial but too young to be considered Gen X. I am pretty adept at digital but I am also old school in that I buy paper books and magazines. I still snail mail some bills but almost exclusively shop online, and think Bezos is a god and Uber a godsend. I love Snapchat and Instagram but write

my thank you notes on stationery. I am a bit of a paradox. But I think there are a lot of us out there who still dabble in the old and new schools of media and technology. I think this is really what makes digital and print so important. We can have it all and a lot of us do. I realize that a lot of this depends on when you "come of age," and I was lucky to experience the beginning of the Internet but remember the days of using an encyclopedia to write papers. We have to adapt to understand the millennials but I think we have something to teach them as well.

I know the importance of development and am constantly researching the next trends in media and reading up on studies to stay on top of how content is being consumed by readers in the luxury and mainstream sectors. One recent morning, I came across data from the most recent Ipsos Affluent Survey. It states that affluent consumers over 40 remain faithful to their passion pubs, the magazines that are generally niche (like WatchTime) and have smaller circulations than mass-market publications. The survey stated that 84 percent read a median of six magazine titles and of these titles, 82 percent read magazines in print and only 37 percent read digital versions online. The survey also stated that affluents read magazines 17 percent more than non-affluent consumers. This made a lot of sense and I felt vindicated for never giving up on my old friend, Mr. Print.

WatchTime will continue to grow with our audience but we will also remember where we came from. Thanks again for your continued support and I wish everyone a successful 2017.

My very best,
Sara Orlando
Publisher



WatchTime readers (top to bottom) Derrick Hicks, Charles Ferraro and Mike DeLauder

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The Next Generation

How do you convince a millennial to spend money on a mechanical analog watch and to wear it on the wrist? Or more precisely: How do you convince someone who is already used to checking the time on a display to replace a most likely, already existing piece of wearable technology offering much more relevant information, functionality and most of all connectivity – with something that tells, well, just the time? And no, it's not even about smartwatches and their evolution into a personal digital information hub. It's about a generation that is currently growing up with an understanding that a digital device or service is much more desirable than pretty much everything else. Look at how the toy industry is changing, for example. Or just ask a millennial (or yourself) to give up his or her mobile phone, or to delete his or her personal account on Instagram, and you will immediately know how important it has become to them.

The next generation of watch buyers may even have grown up with parents or influencers who themselves are not wearing watches anymore. So, convincing a millennial to buy a wristwatch seems a little bit like trying to explain to someone (who doesn't even remember compact discs) why a vinyl record is so much more desirable than a streaming music service providing unlimited access to every piece of music – and to a social network at the same time. And yet vinyl records are being sold in stores like Urban Outfitters right now.

So maybe millennials don't need to be convinced at all: because the more digital our lives become, the more likely we will want to counterbalance them with a little bit of urban gardening, steampunk or vintage clothing. And, although later than previous generations, millennials still do buy watches. It may be a Swatch, a Nixon, a Diesel, a Daniel Wellington or even an Apple Watch at first, but some of them will ultimately learn how irresistible a mechanical movement is. Because as we all know: an analog watch can offer so much more than just the time, and as much "connectivity" as an app. If you happened to attend WatchTime's second luxury event in New York in October, WatchTime New York, you not only

know firsthand how great the watch community is, you may also have noticed how many younger collectors participated.

The good thing is, unlike future buyers and their habits, the concept of a watch won't change much – and since we most likely will not return to pocket-watches or clocks, the industry can focus on further improving the mechanical wristwatch. And let's be honest, regardless of the current economic situation (see, for example, Joe Thompson's take on the FH's export data in this issue's WatchTalk section), the industry has never produced better watches. Look at how, in this issue, we were able to test the Omega Constellation Globemaster Co-Axial, for example, or the engineering that goes into a Ressence, or Panerai's take on the minute repeater, or how A. Lange & Söhne managed to let us stay awake at night thanks to the Grand Lange 1 Moon Phase Lumen – mechanical watches have never been better, more interesting and more innovative. Period.

Younger brands like Christopher Ward, which we introduce in this issue, will also help to attract new customers thanks to an attractive online distribution model (proving at the same time that a mechanical product can very well be sold online). And some of them may become serious collectors, who will be equally interested to hear what John Reardon, head of the watch department at Christie's, told Norma Buchanan. In addition, we take you and a couple of watches on a real dive, explain how much work goes into making a dial, and ask F.P. Journe to take a trip down memory lane.

Last but not least, in this issue you will find some of the latest watch novelties and a selection of women's watches right in time for the holidays, which will hopefully not only inspire you, but also have an impact on watch sales.

Speaking of inspiration: my 17-year-old nephew, who has never owned or showed any interest in a watch, just recently asked his parents if he could have one of their old watches. Apparently it's a thing now.

Roger Ruegger
Editor-in-Chief



Breguet, the innovator. Type XXI 3817 flyback chronograph

Equipped with the famous flyback function characteristic of Type XX chronographs produced by Breguet since 1954, the Type XXI 3817 chronograph features all of the technical and aesthetic characteristics of an authentic pilot's watch. The sapphire crystal case-back reveals the exquisite details of the mechanical movement, including its silicon components and gold oscillating weight. History is still being written...



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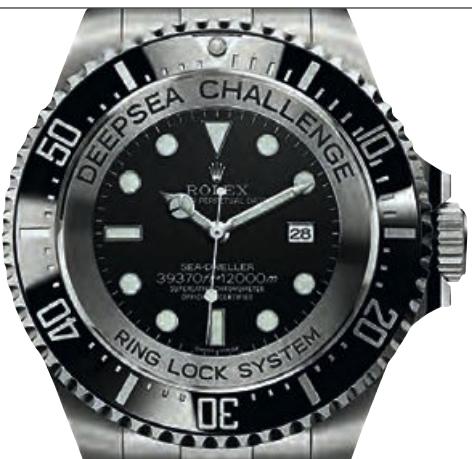
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A BRAND IS GROWING UP**

By Roger Ruegger | For more than a decade, the English newcomer brand has offered its watches exclusively via direct online sales. But following its merger with Synergies Horlogères of Bienne in 2014, Christopher Ward embarked on new paths, including its own in-house movement and modules.

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JAEGER-LECOULTRE BOUTIQUES

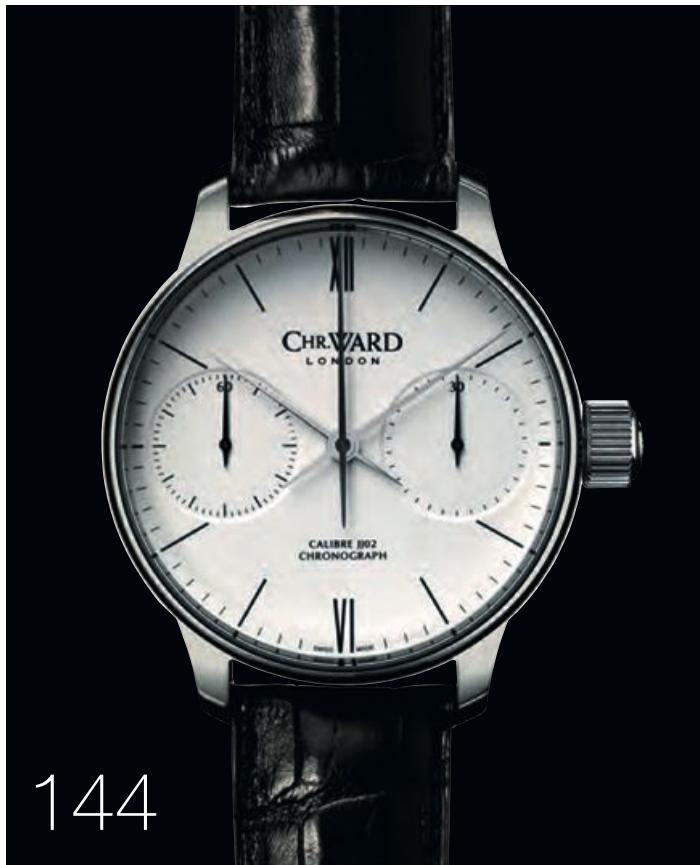
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ON THE COVER: *The Omega Constellation Globemaster Co-Axial Master Chronometer. Photo by OK-Photography*



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TIMEPIECE TIMELINE: BULOVA HISTORY THROUGH 10 MILESTONE WATCHES

Founded in New York City in 1875, the Bulova Watch Co. has been responsible for numerous watch world milestones in its century-plus of existence, and continues to innovate well into the modern day. We look at 10 important timepieces from Bulova's history and discover what they meant for the brand and for the watch industry as a whole.



BORROWED TIME: TUDOR BLACK BAY BRONZE
Bronze cases have become a quietly growing trend in the watch world, especially in the arena of divers' watches, due to the metal's ability to develop a distinctive patina with age. We spent a week with one of these bronze-cased divers, the Tudor Black Bay Bronze, outfitted with Tudor's in-house Caliber MT5621, a watch whose look deftly straddles the line between retro and contemporary.

ORIS GOES GREEN: NEW GREEN-DIAL DIVERS SIXTY-FIVES

The Oris Divers Sixty-Five revives the look of an Oris dive watch released more than half a century ago and gives it a 21st-century makeover, with a larger case in corrosion-resistant stainless steel, a bubble-shaped sapphire crystal, and a dive-friendly unidirectional bezel. This year, Oris adds to the vintage-inspired collection with four new models with dark green dials.

WILD BLUE YONDER: BREITLING NAVITIMER AURORA BLUE

Breitling's post-Baselworld 2016 rollout of new models continues with an all-blue, limited-edition version of its iconic Navitimer pilots' watch. The Breitling Navitimer GMT Aurora Blue, which has a 48-mm case and a rubber strap with aircraft tire tread pattern, is equipped with in-house Caliber B04, which pairs a chronograph with a GMT indication.



NEXT GENERATION: RICHARD MILLE RM 11-03 FLYBACK CHRONO

Introduced in 2007, Richard Mille's RM 011 flyback chronograph model has become a mainstay of the brand's collection. This year, Richard Mille retires the RM 011 to make room for its successor, the RM 11-03, which features a more visually striking movement inspired by Formula One design and an upgraded, three-part tonneau case.

ZENITH TEAMS WITH LAND ROVER FOR NEW EL PRIMERO

Zenith introduced its groundbreaking El Primero chronograph in 1969. That same year, British automaker Land Rover launched the prototype for the world's first luxury off-road vehicle, the Range Rover. This year, the two brands unite for a long-term partnership, kicking it off with the release of a special timepiece, the Zenith El Primero Range Rover Special Edition.



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'IF THE WATCH MARKET WANTS TO CONTINUE TO GROW WITH NEW CUSTOMERS, BRANDS WILL NEED TO GET BACK TO BASICS AND CREATE AFFORDABLE WATCHES.'

30 METERS

In the October 2016 issue of WatchTime, while discussing "Panerai's Number Two is a First," a mention is made about "a water-resistance level of about 30 meters." Does this mean one cannot shower or take a bath with this watch? What about a swimming pool?

Dr. Myron A. Shoham
via e-mail

Roger Ruegger replies:

When it comes to water resistance, more is usually better: 30 meters (plus a 10-percent safety margin in Panerai's case) means the watch can withstand a pressure of 3 bar for a certain amount of time the moment it was tested. But age, temperature changes and external influences, for example, soap, cosmetics and dust, or shocks, impacts and sudden movements, can negatively affect the water resistance of your watch. Therefore, you should be able to wear the Luminor Due when you swim (preferably on the surface, no diving), but may not want to jump into the pool, for example. Also keep in mind that the Luminor Due comes with a leather strap. Panerai recommends to have the "watch checked periodically for water resistance by an Authorized Panerai Service Center and restore it every two years with regular servicing, or whenever the watch has to be opened" or even "every year before the season of underwater activities begins."

PRICE ON REQUEST

I am a big fan of WatchTime and just received the October 2016 issue. I initially scan the entire magazine prior to going back to the beginning to read each page intently. What I noticed in this issue, beginning with the "AP Supersonnerie" article, was that there was no mention of pricing. Was this an oversight on your part or did I just not scan the article carefully enough prior to reading it? Shouldn't

WatchTime welcomes correspondence from readers. Send comments to editor-in-chief Roger Ruegger at 274 Madison Avenue, Suite 804, New York, NY 10016 or via e-mail to ruegger@watchtime.com. Please include your full name, city and state, and country (if outside the United States). Letters may be edited for length or clarity.

that be part of "Specs"? To me, one of the most important parts of a watch review is the price.

Richard F. Driscoll
via e-mail

Roger Ruegger replies:

You are, of course, right. In certain cases, a watch manufacturer may decide not to communicate the final list price, which may be due to reasons of discretion, currency exchange rates, etc. We will contact Audemars Piguet again and try to provide you with a list price.

DEALING WITH THE DOWNTURN

I must admit that a part of me finds it difficult to feel empathy for an industry that has for years been raising prices dramatically and is now feeling a bit of the pain as consumers are finally saying no, it is too expensive. Years ago, when I started collecting watches, there was much more access for the average person to buy at least a mid-level watch without breaking their bank account. Well-established brands that produce high volumes of watches such as Rolex and Omega could still be had. Remember the days when the Omega Seamaster from the 1990s with the 1120 movement could be bought at a price level that the average collector could handle or save for? That's just one example, but I see more buyers waiting till the new watches can be purchased at a reasonable price on the pre-owned or gray markets. In the big picture, there will always be consumers with enough money to spend whatever they want on an item, but if the watch market wants to continue to grow with new customers (younger and newer collectors), brands will need to get back to basics and create affordable watches that allow people to enter the world of luxury watches.

Stephen A. Kirsch
via e-mail



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Swiss Watch Exports: The Century So Far

The big winner by far is China, whose imports of Swiss watches have risen by 2,869 percent in value.

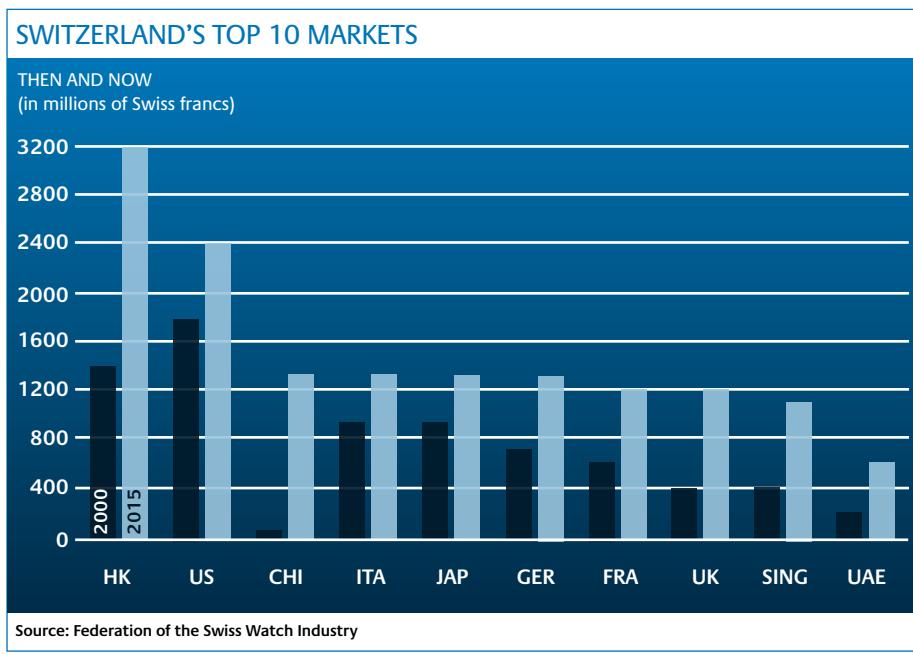
For Swiss watchmakers, the new century, after a flat start (2000-'03), has been a roller coaster ride of boom (2004-'08), bust (2009), boom (2010-'12) and bust (2015-'16) cycles. Along the way, Swiss watch exports have doubled in value, from 10.3 billion Swiss francs in 2000 to SF21.5 billion in 2015 (+109 percent).

For all the market's ups and downs, though, an analysis of Swiss export data shows that there has been remarkably little change in the ranks of Switzerland's top export markets in the past 15 years. Eight of the top 10 markets at the turn of the century (2000) remained in the top 10 in 2015. In most cases, they held nearly the same rank as they did in 2000.

In 2000, the U.S. was Switzerland's top export market. In 2015, it was #2. Hong Kong, #2 in 2000, was #1 last year. It overtook the U.S. as the top market in 2008. Italy, #4 in 2000, was still #4 in 2015. Japan slipped from #3 to #5 over the span.

Germany (#5 to #6), France (#6 to #7), the U.K. (#7 to #8) and Singapore (#8 to #9) slipped one notch each. The United Arab Emirates, #12 in 2000, moved into the #10 spot.

For the most part, the rich markets have gotten richer in the new century. There is, however, one giant exception to that rule: China. In 2000, China was near the bottom of the Swiss pecking order, with exports amounting to a measly SF45 million. (You needed nearly SF200 million to get into the top 10 in 2000. Thailand was ranked #10 with exports of



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New NOMOS watches for premieres, podiums, and parties: such as Tangente neomatik nachtblau, depicted here. Find this and other timepieces with the NOMOS swing system and the automatic movement of the next generation now at selected retailers. More at nomos-store.com, nomos-glashuette.com.



SF193 million.) By 2015, China had rocketed from nowhere to the #3 spot with exports totaling SF1.34 billion.

China's well-known spectacular surge has been the export story of the century so far. Its 2,869-percent increase in export value is off the charts compared to other top 10 markets. The U.A.E. had the second highest growth rate at 426 percent. The U.K. was third with a 170-percent jump. The U.S. had the lowest percentage increase at 28 percent. Japan was second lowest at 41 percent. (See table.)

This year's difficult global market for watches is shifting the rankings again. Swiss watch exports are down 11.1 percent in value through the first seven months on this year; 21 of the top 25 markets are down compared to 2015. China is down 13.5 percent in that period and has fallen to fifth place for the year. Japan has moved into the #3 spot. Hong Kong's position as the top market is extremely shaky. Swiss watch exports there dropped 32.7 percent in July. It was the 18th consecutive month of export declines in Hong Kong. For that month, the U.S. moved into the top spot. It is a sure sign of tough times when a market can fall by 14.7 percent, as the U.S. did in July, and still topple the leader. Year-to-date, Hong Kong was still #1 but by a narrow margin.

- JOE THOMPSON

TOP 10 SWISS WATCH EXPORT MARKETS

2000	2015
1. US	Hong Kong
2. Hong Kong	US
3. Japan	China
4. Italy	Italy
5. Germany	Japan
6. France	Germany
7. UK	France
8. Singapore	UK
9. Spain	Singapore
10. Thailand	UAE

Source: Federation of the Swiss Watch Industry



*The Antiqua
Perpetual
Calendar*

Winning Hands

"I love to create crazy time machines." So says watchmaker Vianney Halter in a press release announcing his winning of the prestigious Gaïa Prize, awarded annually by the Museum of Watchmaking in La Chaux-de-Fonds. In fact, during his 22 years as an independent, he has become as closely associated with the concept of "crazy" (or, more genteelly, "avant garde") as any other watchmaker.

Halter accepted the award at a ceremony at the museum in September. The Gaïa Prize has been in existence since 1993, awarding those who have contributed to the advancement and reputation of watchmaking. The roster of past winners reads like a who's who of watchmaking, and includes such notables as Philippe Dufour, Vincent Calabrese, George Daniels and F.P. Journe.

Halter, born in 1963 on the outskirts of Paris, attended the Paris Watchmaking School and then worked for a decade doing timepiece restoration. After that, he spent several years making watches for luxury Swiss watch brands. In 1998, he introduced the first watch under his own name, and that's when the "craziness" began. The watch was called the Antiqua Perpetual Calendar. It had four porthole-like indicators



The Trio

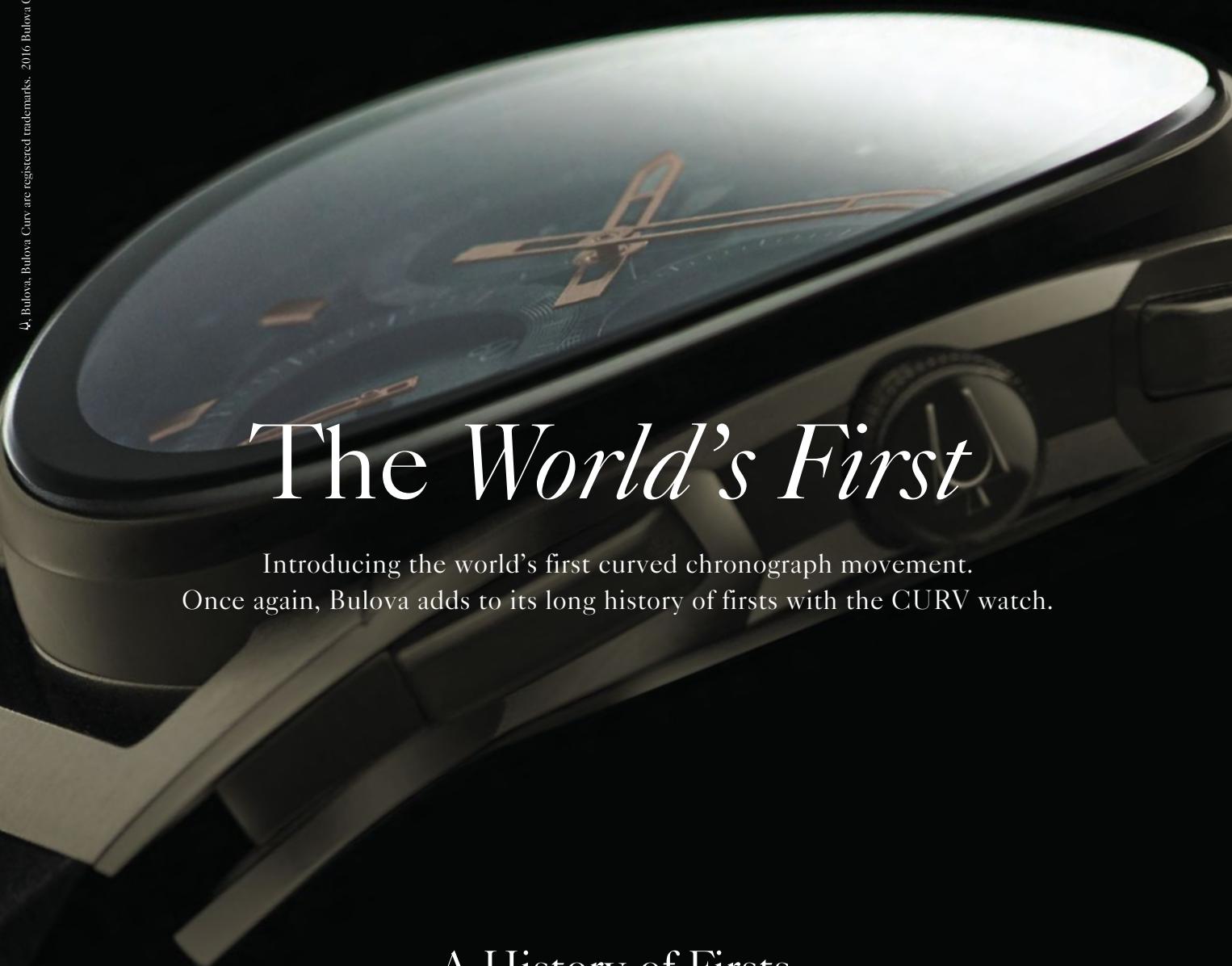
for time, month and leap year, day and date. The watch had a steampunk look to it; it represented, Halter says, "the future as seen by Jules Verne or H.G. Wells" and reflected his strong interest in science fiction.

Since then, he's made 10 more watch models, all of them with a quirky, sci-fi tinge. In 2007, he launched the Trio, a rectangular watch with a chunky gold ingot as its case. Like the Antiqua, it has riveted portholes for time and calendar displays. In 2013 came the Deep Space Tourbillon. Halter says it is meant to represent four dimensions: height, width, depth and time. The last is represented by a triple-axis tourbillon spinning in the middle of the dial at three different speeds: once every 40 seconds, every 6 minutes and every 30 minutes.

Halter's was one of three Gaïa Prizes awarded. Another, in the category of history-research, went to Roger Smith, who has studied, among other watch-history topics, the transfer of watchmaking technology during the Age of Enlightenment. (He is not to be confused with the well-known British watchmaker of the same name.) Giovanni Busca and Pascal Rochat won in the entrepreneurship category for their work in, the museum says, "enhancing the position of the Neuchâtel Observatory and developing the industrial applications of their atomic clockmaking research."

*The Deep Space
Tourbillon*





The *World's First*

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A History of Firsts

BULOVA

Time Remembered

The Nautilus turns 40 this year, and Patek Philippe is marking the occasion with two limited-edition watches. One is a three-hand model that pays homage to the original Nautilus, the famous Ref. 3700, nicknamed the "Jumbo" because at the time, its 42-mm case (including crown) was considered to be just that. The commemorative model, Ref. 5711/1P, is being manufactured in a series of 700 pieces. The price is \$113,400. The watch case is platinum, 40 mm in diameter (44 including the crown) and fitted with a transparent caseback. The movement is Patek's self-winding Caliber 324 SC, which is fitted with a rotor made of 21k gold. The dial is made of yellow gold covered with a blue PVD coating that is graded from bright to dark from the inside to the outside. In the bottom half of the dial is the inscription "40 1976-2016." The hour markers are baguette diamonds.

The other anniversary watch, Ref. 5976/1G, is an automatic flyback chrono-

graph in a 49.25-mm (including crown), white-gold case, being manufactured in a series of 1,300 pieces. The price is \$96,390. The watch is a tribute to Ref. 5980/1A, which was part of the revamped, 30th-anniversary Nautilus collection that Patek launched in 2006. The movement is Patek's Caliber CH 28-520 C, which has a column wheel and vertical clutch. Elapsed hours and minutes are shown in the subdial at 6 o'clock. Patek says the chronograph mechanism creates very little friction and it is therefore possible to keep the center-mounded chronograph seconds hand running constantly without causing wear. The movement's balance spring is made of Silinvar, Patek Philippe's version of silicon. The date changes instantaneously at midnight, in 1/10-second. Like Ref. 5711/1P, the watch has a blue dial (made of brass, not gold, as in the 5711) inscribed with the number "40" and the dates 1976-2016 and adorned with diamond hour markers.



Ref. 5711/1P,
an homage to
the "Jumbo"

Ref. 5976/1G
was inspired by
Ref. 5980/1A,
introduced in 2006.

TOP 10 MOST VALUABLE LUXURY BRANDS

(Brand value in \$ billions, 2016)

1. Louis Vuitton	28.51
2. Hermès	19.82
3. Gucci	12.59
4. Chanel	10.32
5. Rolex	8.15
6. Cartier	6.75
7. Burberry	4.59
8. Prada	4.40
9. Tiffany & Co	2.47
10. Christian Dior	2.07

Source: Millward Brown BrandZ report

Rolex the 'Most Valuable' Watch Brand

Rolex is the world's most valuable watch brand, according to Millward Brown, a research group. What's more, it is the world's fifth most valuable luxury brand overall.

Millward Brown estimates Rolex's "brand value" at \$8.15 billion in 2016. The estimate is part of the research company's annual BrandZ report ranking the top 100 most valuable global brands. It also ranks the top 10 most valuable brands in key product segments, one of which is luxury. The estimate is based on a complicated formula combining financial information and consumer surveys. The research involves 3 million consumers and 100,000 brands in more than 50 markets, Millward Brown says.

Rolex is the only one of the top 10 luxury brands whose sole product is watches. While other top 10 luxury brands – such as Hermès, Gucci, Chanel, Tiffany & Co. and Louis Vuitton – produce watches, their core businesses are other luxury products. (See table.)

The only other top 10 brand with watch revenues exceeding \$1 billion is Cartier. It ranks just below Rolex at #6, with a brand value of \$6.75 billion. Rolex is Switzerland's top watch brand in total sales. Cartier ranks third, after Omega. In addition to watches, however, Cartier has a huge jewelry business, as well as Cartier-branded leather goods and accessories. Cartier is also a major global jewelry store chain.

– JOE THOMPSON

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1,464,000,000

Total global watch production in 2015, according to the Japan Clock & Watch Association



44,000,000

Total global production of mechanical watches in 2015, according to the Japan Clock & Watch Association

8,300,000

Swiss production of mechanical watches in 2015, based on data from the Federation of the Swiss Watch Industry (FH)

31

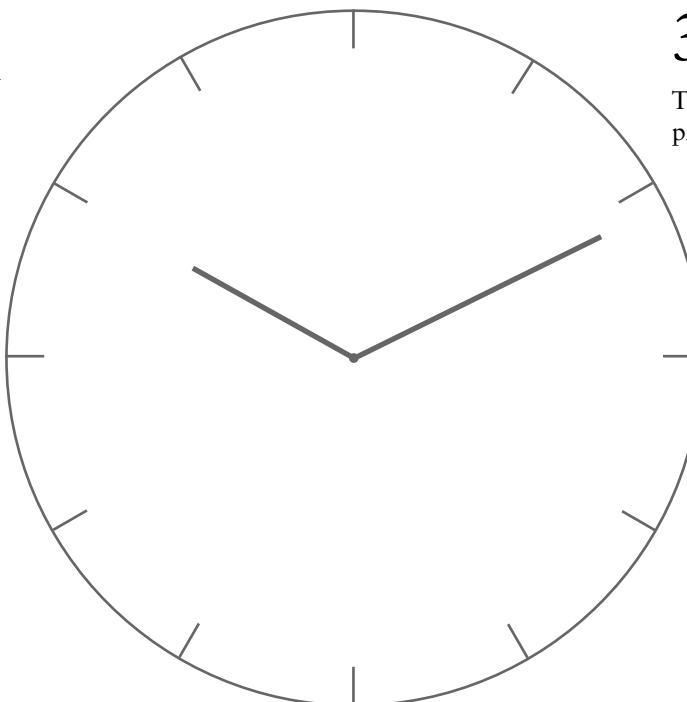
Percentage of American consumers in 2015 who said they are likely to buy a smartwatch in the next 12 months, according to a Deloitte survey

20

Percentage of American consumers in 2016 who said they are likely to buy a smartwatch in the next 12 months, according to a Deloitte survey

59

Percentage of Chinese consumers in 2016 who said they are likely to buy a smartwatch in the next 12 months, according to Deloitte



19

The number of consecutive months that Swiss watch exports to Hong Kong have suffered steep declines (through August 2016), according to FH data

14

The number of consecutive months that Swiss watch global exports have declined (through August 2016), according to FH data



30,000,000

Total number of smartwatches sold in 2015, according to Gartner Inc.

50,400,000

Forecast for the number of smartwatches that will be sold in 2016, according to Gartner Inc.

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Quality Time

Test your knowledge of quality certificates and seals.

1. What brand used to have all of its mechanical watches certified under the Geneva Seal?

- A. Vacheron Constantin
- B. Rolex
- C. Patek Philippe
- D. Piaget

2. The Grand Seiko Certificate requires the movement

- A. Be tested in six positions
- B. Be more precise than COSC certification requires
- C. Have chamfered bridges and plates
- D. A and B

3. Which of the following is *not* a requirement of the Geneva Seal?

- A. The movement must be assembled within Geneva's city limits.
- B. Each certified watch must be sold with its certificate.
- C. The watch manufacturer must be based in Canton Geneva.
- D. Machining marks must be removed from the movement's bridges and plates.

4. How precise must a watch be to earn the Geneva Seal?

- A. To within 1 minute per week
- B. To within 2 minutes per week
- C. To within 42 seconds per week
- D. None of the above. The Geneva Seal does not have a precision requirement.

5. The Geneva Seal hallmark can be applied only to a watch's

- A. Caseback or movement plate
- B. Dial, movement plate or case
- C. Movement plate or bridge
- D. Movement plate

6. True or false: COSC recently changed its procedures so that it now tests cased movements, not uncased ones.

- A. True
- B. False

7. Which watchmaking town(s) has its own quality certificate?

- A. Besançon, France
- B. La Chaux-de-Fonds, Switzerland
- C. Glashütte, Germany
- D. A and C

8. How many movements did COSC certify last year?

- A. 269,003
- B. 732,592
- C. 1,729,866
- D. 2,953,286

9. COSC certification requires that a movement's average daily rate in seconds per day fall within

- A. -2 and +4
- B. -4 and +6
- C. -5 and +7
- D. -9 and +10

10. In 2015, what were the top three recipients of COSC certificates, in descending order?

- A. Rolex, Omega and Breitling
- B. Rolex, Omega and Tissot
- C. Rolex, Breitling and TAG Heuer
- D. Omega, Rolex and Tissot



How precise must a watch be to earn the Geneva Seal?

11. Last year, what percentage of COSC certificates were awarded to quartz movements?

- A. About 1 percent
- B. About 4 percent
- C. About 12 percent
- D. About 23 percent

12. Which brand's watches all bear the Geneva Seal?

- A. F.P. Journe
- B. Rolex
- C. Roger Dubuis
- D. Urwerk

13. Chronofiable certification requires that a watch

- A. Endure various tests meant to simulate six months of actual wear
- B. Be water resistant to 50 meters
- C. Be assembled in Canton Neuchâtel
- D. Withstand magnetism up to 5,000 gauss

14. What is Timelab?

- A. A facility for testing German-made watches
- B. The Geneva Seal's testing facility
- C. A COSC testing facility
- D. B and C

15. What brands make use of the Fleurier Quality Foundation Seal?

- A. Chopard, Speake-Marin, Piaget
- B. Parmigiani, Laurent Ferrier, Bovet
- C. Parmigiani, Chopard, Bovet
- D. Parmigiani, Perrelet, Corum

Answers: 1C; 2D; 3A; 4A; 5C; 6B; 7D; 8C; 9B; 10A; 11B; 12C; 13A; 14D; 15C

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PATEK PHILIPPE

Patek Philippe's Annual Calendar is presented in a precious and refined version. The 38-mm rose-gold case has been redesigned with more pronounced curves to accentuate its feminine nature. All indications, including moon-phase, are set against a white Balinese mother-of-pearl dial with gold Arabic numerals. The bezel, case, lugs, crown and buckle are set with 374 diamonds. Automatic movement. Sapphire caseback. \$70,310.



Time for Her

An array of the latest women's watches for holiday gift-giving



PIAGET

Piaget's Altiplano Chronograph is the world's thinnest hand-wound flyback chronograph and measures 8.24 mm. This version has a 41-mm white-gold case and a bezel set with 56 brilliant-cut diamonds (approx. 1.8 carats). The movement is the world's thinnest hand-wound flyback chronograph movement at 4.65 mm. Small-seconds and 30-minute counters and second time zone at 9 o'clock. Black alligator strap with white-gold buckle. \$40,400.



CARL F. BUCHERER

Top Wesselton diamonds and pastel sapphires combine to suggest the image of a swan gliding over the water on the dial of the Carl F. Bucherer Pathos Swan. The swan symbolizes elegance and beauty as well as the city of Lucerne and its eponymous lake. The hour and minutes hands and the crown and aureole are characteristic of Bucherer's Pathos collection. A total of 922 diamonds and sapphires adorn the 34-mm rose-gold case, dial and bracelet. CFB 1851 quartz movement. Limited edition of 88 pieces. \$171,600.

RALPH LAUREN

The limited-edition 867 Deco Diamond timepiece from Ralph Lauren evokes the glamour and elegance of the Art Deco era. It is set with baguette diamonds and black spinel, which create a geometric pattern on the watch's square case. The dial features a combination of Roman and Arabic numerals. The watch is equipped with the RL430 movement made by Piaget for Ralph Lauren. It is being sold exclusively at Ralph Lauren's newly renovated Rodeo Drive flagship. Price upon request.



ROGER DUBUIS

Each of the three models in the Roger Dubuis Black Velvet trilogy features the use of gem-set carbon, which required a newly evolved and patented technique. This high-tech material is 10 times lighter than gold and offers an airy feel on the wrist. The multi-layered technique creates a mottled, wave-like appearance and a new look. Shown here, a model with 66 Paraiba tourmalines (approx. 1 carat) set on the bezel and "third lug" décor with a dove gray satin-finished fabric strap. RD821 self-winding movement. Limited edition of 88 pieces. As shown: \$59,300.

JAQUET DROZ

In 2008, Jaquet Droz launched the Grande Seconde SW, its athletic version of the brand's famous model with two subdials forming the figure 8. This year, Jaquet Droz has unveiled the sporty and feminine Grande Seconde SW Lady. Its stainless-steel case, 41 mm in diameter, is set with 40 diamonds (0.86 carat) that surround a mother-of-pearl dial. The winding crown is surrounded by a sporty rubber ring. The alligator strap is an elegant powdered violet color. Self-winding Jaquet Droz movement. \$21,000.



BULGARI

The Bulgari Bulgari Piccola Catene is named “small chains” in Italian because its articulated bracelet flows around the wrist like a second skin. The chain bracelet encircles a dainty 22-mm case that has either the brand’s double signature or 31 brilliant-cut diamonds on the bezel. Available in four versions: in white or rose gold; with bracelet, clasp and links partially set or entirely set with diamonds; with a black or mother-of-pearl dial set with 12 brilliant-cut diamonds, or with a dial entirely paved with diamonds. As shown, white-gold version with diamond-set bezel (approx. 0.56 carats); bracelet, clasp and links set with 32 diamonds (approx. 0.96 carats); and 12 diamond hour markers (approx. 0.06 carats). B033 quartz movement. As shown: \$32,000.



SEIKO

Seiko is honoring the achievements of American Ballet Theatre principal dancer and brand ambassador Misty Copeland with the Seiko Tressia Misty Copeland Limited Edition timepiece. The stainless-steel case has 24 diamonds on the bezel, a mother-of-pearl dial with two diamond markers, and a two-toned design with rose-gold highlights. An exclusive design decorates the dial. The watch is solar powered and never requires a battery change. Numbered and signed caseback. Limited edition of 2,000 pieces. \$575.



BELL & ROSS

The BRS Diamond Eagle pays tribute to the night sky that has always fascinated and guided pilots. It features a round midnight blue dial set in a gently squared 39-mm steel case, with gleaming metal indexes and seven diamonds that are set in the pattern of the Aquila constellation, named for the eagle that carried Jupiter’s thunderbolts in mythology. The diamond version, shown, has a bezel set with 66 diamonds (0.99 carats). BR-CAL.102 quartz movement. Midnight blue alligator strap. As shown: \$6,600.



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CARTIER

Contrasting tones of black and white take the spotlight in Cartier's new Hypnose collection. Ellipses in jewel-like white are accentuated with pavé-set diamonds to create a watch that falls halfway between sophisticated evening attire and day wear. Shown here, small model in rhodiumized white gold, with the bezel set with brilliant-cut diamonds, on an alligator leather strap. Also available in a large-size model, with the dial and bracelet also set with diamonds, with black lacquer ellipses, or in rose gold. Quartz movement. As shown: \$27,600.



PERRELET

The Diamond Flower Amytis is now available in pastel shades, such as ivory or light blue. Its dial is enlivened by Perrelet's Double Rotor function that has become a signature feature of the brand. One of the automatic movement's twin oscillating weights is visible on the dial side and formed into stylized petals and leaves that are cut out, rhodium-plated, sandblasted and decorated with 16 diamonds (0.067 carats) and mother-of-pearl. The watch is fitted with a white or blue alligator strap. \$6,390.



BREMONT

The Bremont SOLO-32 Collection is comprised of ladies' mechanical chronometers with 32-mm cases and a number of dial designs. The SOLO-32 AJ is named for Amy Johnson, who flew her DH-60 Gypsy Moth from England to Australia in 1930. The line has a modern aesthetic with applied index markers on the dial. The polished steel case has Bremont's three-part Trip-Tick construction and is given the brand's signature coating for extreme hardness. As shown, on calf-leather strap: \$4,095.





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Abt Time Boutique Glenview, IL | New York Jewelers Chicago, IL | Bassano Jewelry New York, NY | Madison Jewelers New York, NY
Danson Jewelers Hasbrouck Heights, NJ | Orologio Short Hills, NJ | Bellman Jewelers Manchester, NH | Benari Jewelers Exton & Newtown Square, PA
Chalmers Jewelers Middleton, WI | Continental Diamond Minneapolis, MN | Right Time International Watch Center Denver & Highlands Ranch, CO
Leo Hamel Fine Jewelers San Diego, CA | Feldmar Watch Co. Los Angeles, CA | K & Co. Family Jewelers Brentwood, CA | E.D. Marshall Scottsdale, AZ



BOVET

The Lady Bovet Flower of Life has a seven-day power reserve and a reversible case thanks to the Bovet Virtuoso II caliber. The first face has an off-centered dial for the hours and minutes set with 12 diamonds at 12 o'clock, seconds carriage at 6, the center wheel and its bridge are visible at 4, and the power-reserve indicator is at 10. On the reverse side: a classic dial with hours and minutes, which features a hand-gilded flower of life engraved in *grand feu* enamel (shown) or in mother-of-pearl. As shown, in white gold: \$130,800. Also available in rose gold. The watch comes with a chain to be worn as a pendant.

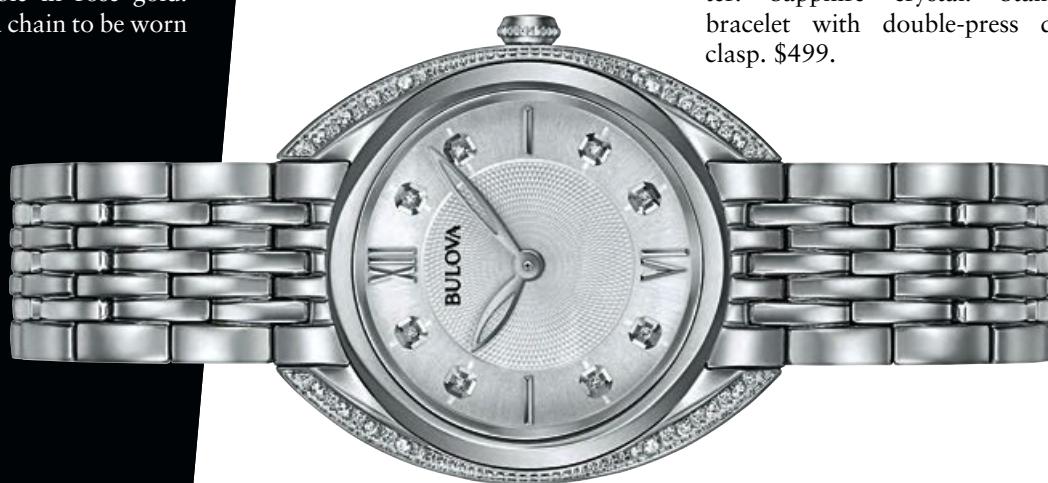
TUTIMA

Tutima's Saxon One Lady is sporty and elegant at the same time. The watch has an angular 36-mm stainless-steel case and a circular bezel set with 48 diamonds (0.72 carats). The dial is mother-of-pearl and has a date window at 3 o'clock and central seconds. Automatic Tutima Caliber 340 movement. Available with a light blue alligator strap, as shown; with a gray alligator strap without diamonds; or with a stainless-steel bracelet, with or without diamonds. As shown: \$6,100.



BULOVA

The sleek, ergonomic shape of this feminine watch's stainless-steel case was inspired by the design of Bulova's CURV collection for men. The watch has a slim case (7.4 mm) and a refined, contoured simplicity that follows the wrist. Here, 24 diamonds are individually hand set on the watch's case frame and on the silver-white dial. The case is 30 mm in diameter. Sapphire crystal. Stainless-steel bracelet with double-press deployant clasp. \$499.





Global Time Sync

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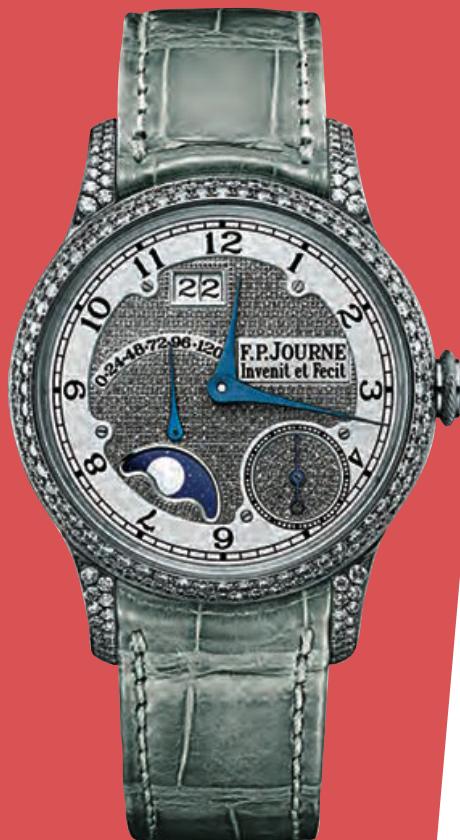
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F.P. JOURNE

The Octa Divine in a 36-mm diameter case is the first model by F.P. Journe to be set with diamonds and to feature center hour and minutes hands. But the recognizable F.P. Journe elements have been retained: the seconds circle in the lower right section, and the hour and minutes circles screwed to the dial. The watch shows the power reserve and moon-phases thanks to a metallic sapphire disk that moves one notch forward when the date changes. Available in three versions: fully or partially set with diamonds, in platinum or rose gold, on leather strap or bracelet. As shown, with platinum case fully set with 484 brilliant-cut diamonds (2.56 carats) and leather strap: \$71,200.



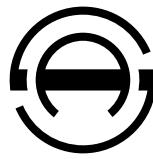
CORUM

Corum's newest jeweled timepiece features a diaphanous "bloom," decorated by hand and surrounded by a lustrous ring of mother-of-pearl. The Heritage Diphylleia, also known as the "Skeleton Flower," has a 34-mm round case encircled with 22 diamonds (5.30 carats). Offered in rose or white gold, limited to eight or 18 pieces, respectively, on a white or gray alligator strap. The case reveals the manual-wind CO055 skeleton movement from front and back. As shown, \$64,800.



CITIZEN

The Citizen L Carina shines with sparkling diamonds on its case and dial. The two-tone stainless-steel case is enhanced with diamonds on a golden ring on the bezel and on the white mother-of-pearl dial. The case is 28 mm in diameter. Two-tone stainless-steel bracelet with deployant clasp. Sapphire crystal. Citizen Eco-Drive movement: the watch never needs a battery change. Also available as a limited-edition model in two-tone rose-gold-tone stainless steel that features a pink gradient mother-of-pearl dial and is decorated with rubies and diamonds. As shown: \$750.



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Naples, FL: Exquisite Timepieces (239) 262 4545

Toronto, Canada: Ebillion Watches (416) 960 5500

CHOPARD

This new model in Chopard's Happy Fish collection features a turquoise textured mother-of-pearl dial with subtle color nuances that create a "blue lagoon" effect. The fish in the center of the dial is discreet by day and lights up at night. Five moving diamonds, luminescent at night, and a small rose-gold moving fish dance within the dial. The turquoise alligator strap picks up the dial colors. The automatic movement is housed in a steel and rose-gold case. \$9,790.



FRÉDÉRIQUE CONSTANT

The Classics Delight Automatic is elegant and feminine, from the slim two-tone case to the hand-polished rose-gold-plated hands. The silver-color dial has guilloche decoration and mother-of-pearl, applied rose-gold-plated indexes with eight diamonds, and a date display with rose-gold-plated opening at 6 o'clock. 33-mm diameter case. Stainless-steel three-link bracelet with rose-gold-plated center link. FC-306 automatic movement. Each watch sold from Frédérique Constant's Ladies' Collection contributes \$50 to directly support charity organizations around the world, helping women and children in particular. \$1,995.



NOMOS

Nomos is introducing the Minimatik Nachtblau in time for the holidays. The new, midnight blue lacquered dial has pearly indexes, rose-gold numerals, and green printed accents. Small-seconds sub-dial at 6 o'clock with green indexes and neon orange lacquered hand. 35.5-mm stainless-steel tripartite case with sapphire crystals in front and back. Rembored Horween Genuine Shell Cordovan hand-stitched black strap with Nomos buckle clasp. In-house DUW 3001 automatic movement. \$3,800.

160
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The Pioneer:

MEGA STRESS TEST

Omega's Constellation Globemaster Co-Axial Master Chronometer can resist magnetic fields up to 15,000 gauss, as its METAS certification requires. But can it stand up to the 70,000 gauss of a state-of-the-art MRI scanner?

BY MARTINA RICHTER

PHOTOS BY OK-PHOTOGRAPHY, ©FOTOLIA, JUICE IMAGES AND UHREN-MAGAZIN



CLOSE-UP

Omega Constellation Globemaster Co-Axial Master Chronometer

In 2015, Omega began sending its watches to Switzerland's Federal Institute for Metrology (METAS) to be tested for resistance to magnetic fields with intensities up to 15,000 gauss (1.5 teslas). METAS issues official certificates for timepieces that pass its exam. That year, the Omega Constellation Globemaster Co-Axial Master Chronometer, our test watch, was introduced at Baselworld. The movement that powers this watch, automatic Caliber 8900, was certified by METAS to withstand magnetic fields up to 15,000 gauss. It was also in 2015 that Siemens Healthcare GmbH developed and set up its first seven-tesla (70,000 gauss) MRI scanner (called the "Magnetom Terra") at Erlangen University Hospital in Erlangen, Germany. We asked if we could conduct a magnetic-field test of our Globemaster on the hospital's seven-tesla MRI device and could scarcely believe our good fortune when we were told yes. It seemed that Siemens Healthcare was as interested in this unconventional test as we were.



A sapphire window in the caseback reveals Caliber 8900.

without additional winding. Therefore, the watch showed the rate results that are a precondition for METAS's test. We measured the Globemaster's timekeeping in six positions, as specified by METAS, rather than in five positions, as specified in COSC's chronometer tests. Our wearing test on the wrist found that the watch gained only 1.5 seconds per day.

Omega claims that the two serially arranged barrels in Caliber 8900 will keep the movement running for 60 hours. Our test watch ran nearly 10 hours longer than that, albeit with its last available energy. It didn't stop running during these final 10 hours, but it didn't keep time with chronometer-like accuracy, either. When we wound the Globemaster manually, we found that its crown turns rather stiffly. The time-zone function is a practical added feature. The hour hand can be repositioned either forward or backward in hourly increments when the crown is pulled out to its middle position. This is convenient when traveling and when resetting the watch twice a year to show standard time or daylight saving time. The date display automatically switches forward or backward to stay synchronized with the time. And the watch's movement keeps running throughout the resetting process, so the seconds hand continues to show the correct second. The rapid-reset function for the date display is also activated via the time-zone function.

A quick glance at the date indicator showed a minor blemish: the black background of the date disk isn't a good match for the blue opalescence of the main "pie-pan" dial. The dial's inverted pan-like shape is reminiscent of the first Constellation model from 1952. The fluted bezel also recalls the 1950s and helps make the Globemaster easy to recognize. The grooved bezel on the stainless-steel model that we tested is made of tungsten carbide. It surrounds a curved nonreflective sapphire crystal, behind which the time is shown very legibly: the hours, minutes and seconds appear in white in daylight and glow with a gentle blue in the dark.

A high-quality leather strap holds the watch comfortably and securely in place on the wrist.

We set out toward Erlangen. Our equipment on this journey included an electronic timing machine, a demagnetizing device, a photo camera, a video camera, and – needless to say – the Globemaster. We patterned our test after the methods used in the METAS exam. Omega divulged these test criteria to us, but we hadn't yet told Omega exactly what we had in mind for the Globemaster. Exposing it to seven-tesla magnets is an ordeal that even Omega had never officially tried. We were truly on the eve of a world first.

But before the Globemaster encountered the MRI, the timepiece underwent four days of testing on the wrist and our timing machine. These tests showed that the Globemaster ran progressively faster as its power reserve declined. The fully wound watch began with an electronically measured gain of 3.4 seconds per day. The daily gain increased to 6.0 seconds after 48 hours of uninterrupted running

SPECS

OMEGA CONSTELLATION GLOBEMASTER CO-AXIAL MASTER CHRONOMETER

Manufacturer: Omega SA, Jakob-Stämpfli-Strasse 96, 2502, Biel/Bienne, Switzerland

Reference number:
130.33.39.21.03.001

Functions: Hours, minutes, central seconds, date, time-zone function

Movement: In-house co-axial 8900, automatic, COSC certified, certified by METAS to be antimagnetic to at least 15,000 gauss, 25,200 vph, 60-hour power reserve, titanium balance, silicon (Si14) balance spring, fine adjustment via screws on balance, Nivachoc shock absorption, 39 jewels, diameter = 29 mm, height = 5.5 mm

Case: Stainless steel with tungsten-carbide bezel, curved sapphire crystal with nonreflective coating on both sides, sapphire window with a Central Observatory medallion integrated into the caseback, water resistant to 100 m

Strap and clasp: Leather strap with one-sided folding clasp

Rate results:

Deviations in seconds per 24 hours
(Fully wound / after 24 hours)

Dial up	+3.8 / +3.5
Dial down	+1.9 / +3.5
Crown up	+5.3 / +7.1
Crown down	+2.3 / +4.5
Crown left	+3.2 / +4.3
Crown right	+3.7 / +4.9
Greatest deviation of rate	3.4 / 3.6
Average deviation	+3.4 / +4.6

Average amplitude:

Flat positions	272° / 270°
Hanging positions	246° / 233°

Dimensions: Diameter = 38.59 mm, height = 12.86 mm, weight = 98 g

Variations: With white or blue dial and stainless-steel bracelet (\$7,000); in yellow gold or Sedna (rose) gold (\$19,800); in platinum (\$40,700); bi-color (\$8,600 on strap, \$11,000 on bracelet)

Price: \$6,900

CLOSE-UP

Omega Constellation Globemaster Co-Axial Master Chronometer



Technicians from Siemens stand beside the seven-tesla Magnetom Terra MRI scanner as Dr. Robin Martin Heidemann begins the test.

Diagram showing the locations of the magnetic fields in the scanner



	GANG	REP	AMPL
CH	2.9	0.1	282
CB	1.9	0.0	286
9H	2.5	0.1	251
6H	3.3	0.0	255
3H	4.7	0.0	247
12H	3.7	0.2	250
X	3.2	0.1	262
D	2.8	0.2	39

Measurements shown on the timing machine before magnetization, after exposure to six teslas and after exposure to seven teslas.

	GANG	REP	AMPL
CH	1.7	0.1	288
CB	0.8	0.0	294
9H	1.8	0.1	259
6H	3.6	0.0	261
3H	4.4	0.0	260
12H	2.4	0.2	255
X	2.5	0.1	270
D	3.6	0.2	39

It's time for us to meet the team from Siemens in the hospital's MRI room, where we indulge in a bit of shoptalk about "light" magnets, superconductors, and zero-helium boil-off technologies. We discuss the upcoming test with Dr. Robin Martin Heidemann, who has volunteered to wear the Globemaster strapped to his wrist inside the Magnetom Terra. We plan to gradually build up to peak magnetism, beginning at three teslas; then four, five and six teslas; and finally reaching a maximum intensity of seven teslas. Everyone agrees that we'll immediately abort the test if anything unusual or unexpected happens.

We prepare a chart based on a technical diagram showing the location of the magnetic fields of the seven-tesla system. This ensures that the watch will always be positioned in the desired magnetic field. The magnetic exposure will occur for 30 seconds in each of two positions, similar to the METAS test. After each phase of the test, the watch will be checked on the timing machine and then demagnetized. The Globemaster seems blithely unaffected by magnetism up to an intensity of six teslas: immediately after each exposure and without being demagnetized, it runs with average daily deviations of between 2.5 and 3.1 seconds. We ask incredulously, "Is the magnetic field really activated?" To which the team from Siemens jokingly retort, "Are you sure your timing machine is working properly?" "Our timing machine is brand new," we insist. An aluminum plate floating in front of the Magnetom Terra proves the existence of the magnetic field. As a crowning touch, we slide Dr. Heidemann – with the Globemaster on

	GANG	REP	AMPL
CH	2.2	0.1	279
CB	2.1	0.0	280
9H	2.4	0.1	248
6H	3.3	0.0	250
3H	4.9	0.0	247
12H	4.1	0.1	246
X	3.2	0.1	258
D	2.8	0.1	34



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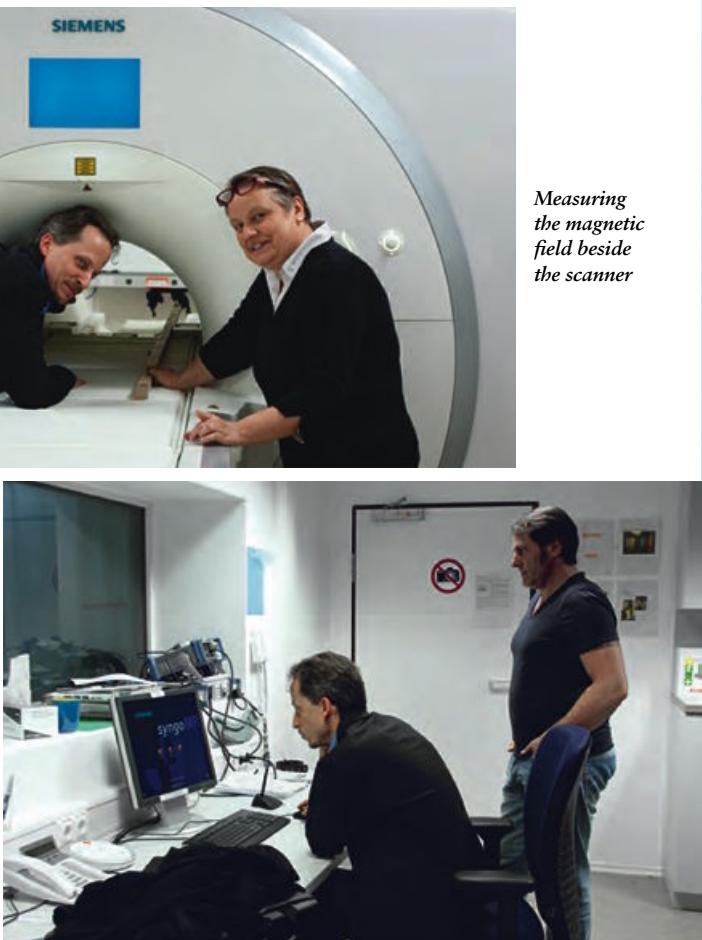
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Double Rotor with "Côtes de Genève décor".
Blue alligator strap.

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Omega Constellation Globemaster Co-Axial Master Chronometer



Measuring the magnetic field beside the scanner

The team from Siemens monitors the test.

his wrist – into the seven-tesla field, which occupies the center of the device. “The seconds hand has stopped moving,” he calls from inside the tunnel. We hold our breath. But when he emerges from the tunnel, we see that the Globemaster is still running. And our timing machine confirms that the watch’s rate is quite normal: a gain of 3.2 seconds, without prior demagnetizing.

We discuss the findings. The specialists at Siemens say that even at seven teslas, no magnetization occurred inside the movement. They believe that the seconds hand briefly stopped running because of turbulent air currents caused by the watch’s motion. Be that as it may, one thing is certain: the Globemaster and Caliber 8900 performed impeccably when exposed to magnetic fields of five or even six teslas.

The Globemaster’s ability to withstand strong magnetism without flinch-

ing is a measure of its quality. Extreme resistance to magnetic fields is actually not necessary because very few people ever come in contact with such powerful magnetism. It’s comparable to having a watch case that can resist pressures of 1,000, 2,000 or 3,000 meters even though divers and their watches seldom or never encounter such pressures. Nonetheless, magnetism remains a relevant and sometimes thorny problem for watchmakers. And now the Globemaster has solved this conundrum. After its enormous stress test inside the seven-tesla MRI, our Globemaster continued to tick merrily on our wrist exactly as it had before – with a slight daily gain of just 1.5 seconds. ○





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NIGHT TIME

The Grand Lange 1 Moon Phase Lumen offers views of its movement through its semitransparent dial but the real show starts at night.

BY JENS KOCH
PHOTOS BY NIK SCHÖLZEL



TEST

A. Lange & Söhne Grand Lange 1 Moon Phase Lumen





hen it comes to elegant watches, A. Lange & Söhne is the keeper of the Grail. Lange's cases are made from precious metals only, not steel. Most of Lange's yellow- and rose-gold watches have no luminous material on their dials because it would detract from their classical appearance. Alligator-leather straps keep Lange's watches from looking even the slightest bit sporty. And while the Lange 1's dial has an asymmetrical layout, the shape of the hands and the style of the typography uphold the brand's tradition.

The Grand Lange 1 Moon Phase Lumen, our test watch, also keeps faith with the brand's design codes. However, parts of its dial are made of semitransparent black-tinted sapphire, which allows you to see the movement. And features on its translucent face are coated with a generous amount of luminous material, which gives this watch a modern, urban look and makes it a handsome nightlife companion.

Earlier Lange luminous watches also had semitransparent sapphire dials: the Zeitwerk Luminous was introduced in 2010 and the Grand Lange 1 Lumen in 2012. But these limited-edition watches are sold out now. The Grand Lange 1 Moon Phase Lumen, released in January 2016, is also a limited edition, but it is even more luminous than previous models: it has a moon-phase display with a moon and stars that glow in the dark.

Lange's decision to use black-toned semitransparent sapphire on the Moon Phase Lumen's dial wasn't just an aes-

thetic one. The material performs two practical functions: it blocks most wavelengths of visible light but it is permeable to the ultraviolet spectra that "charge" the luminous material on the outsize date display and enable it to glow in the dark. When the date advances at midnight, the newly appearing digits gleam just as brightly as their predecessors. The technique works on the "tens" cross that is coated with white luminous material and printed with black numerals as well as on the "ones" disk, which is printed with black numerals also, and is made of transparent glass. This disk rotates above the luminous background. A drawback is that the date display switches slowly.

The moon-phase disk is decorated with luminous stars of various sizes that give it a realistic look. Lange uses a technical trick for this complex display: it makes the disk for the moon's phases out of glass and uses a patented process to coat it. Then a laser beam cuts the moon and stars (there are 1,164 of them) out of the coating so the luminous substance on the surface below can shine through. The process is laborious but definitely worthwhile because the visual effect is exceptional.

The gear train that drives the moon-phase display has been designed to achieve extreme accuracy. The hour wheel continually advances the moon's phase, which won't deviate from astronomical reality by one full day until 122.6 years have passed.

SPECS

A. LANGE & SÖHNE GRAND LANGE 1 MOON PHASE LUMEN

Manufacturer: Lange Uhren GmbH, Ferdinand-Adolph-Lange-Platz 1, 01768 Glashütte, Germany

Reference number: 139.035

Functions: Hours, minutes, small seconds, outsize date, moon-phase, power-reserve display

Movement: Hand-wound *manufacture* Caliber L095.4, 21,600 vph, 45 jewels, fine adjustment via weight screws along the rim of the balance, swan-neck fine adjustment mechanism for the beat, in-house balance spring, 72-hour power reserve, diameter = 34.1 mm, height = 4.7 mm

Case: Platinum with curved and non-reflective sapphire crystal, six screws hold the back in place, sapphire window in caseback, water resistant to 30 m

Strap and clasp: Hand-stitched alligator-leather strap with platinum folding clasp that opens on one side

Rate results:

Deviations in seconds per 24 hours

Dial up	+2
Dial down	+2
Crown up	+2
Crown down	+2
Crown left	+1
Crown right	+7
Greatest deviation of rate	6
Average deviation	+2.7
Average amplitude:	
Flat positions	292°
Hanging positions	247°

Dimensions: Diameter = 41 mm, height = 9.5 mm; weight = 136 grams

Limited edition: 200 pieces

Price: \$78,800

A. Lange & Söhne Grand Lange 1 Moon Phase Lumen

A TRANSPARENT WINDOW in the watch's caseback offers a view of hand-wound Caliber L095.4, a Lange movement featuring the well-known characteristics of this Glashütte-based brand. These include a three-quarter plate made of nickel silver and adorned with Glashütte waves, screwed gold chatons, a screw balance, and a hand-engraved balance cock with a swan's-neck fine adjustment mechanism for the beat. All decorations are meticulously crafted, including the beveled and polished edges of the flat components. This is indeed a handsome movement.

The movement has a swan's-neck fine adjustment device and a three-quarter plate made of nickel silver.

The balance spring is made in house: this is a rare distinction, even among luxury brands. Another plus: this caliber will continue to run for 72 hours after it has been fully wound. And Lange achieves this long power reserve with one barrel.

The high quality doesn't stop with the movement: it's also evident in the dial, the hands and the case. On the various components we were pleased to discover precisely printed luminous material, tidily polished patterns, and very narrow gaps between adjacent parts. However, on our test watch, the platinum folding

clasp wasn't adjusted perfectly: we had to exert a bit of extra force to open and close it. And the folding clasp didn't add to the watch's wearing comfort; the watch didn't fit quite as well as the Grand Lange 1 models with pin buckles that we had tested previously.

We found the Moon Phase Lumen's operation impeccable with the sole exception of the crown, which is small. A stop-seconds function allows to-the-second time setting. The outsize date, which is a hallmark of the brand, can be reset using a single button. And the lunar phase can be adjusted by pressing an





/RITUALS OF TIME/



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A. Lange & Söhne Grand Lange 1 Moon Phase Lumen



The dark sapphire on the dial is permeable by UV rays, which “charge” the luminous material underneath.

inset corrector button. But manual adjustment probably won't be necessary very often: our timing machine calculated that this model gained less than 3 seconds per day.

Of course, everything has its price. And the price of the Grand Lange 1 Moon Phase Lumen cannot be called “modest.” Be prepared to part with nearly \$79,000 for the privilege of owning this watch.

On the other hand, the price doesn't seem quite so high when you consider the high degree of craftsmanship and amount of labor required, the handsome embellishments on the movement, and the superlative quality. It's also comforting to know that some sold-out, pre-

owned Grand Lange 1 Lumen watches are bringing prices above their original ones. And only 200 pieces of the Moon Phase Lumen will be made.

With this watch, Lange achieves something that seems impossible: the Moon Phase Lumen reveals more of its movement than previous models, but does so without detracting from the

SCORES

A. LANGE & SÖHNE GRAND LANGE 1
MOON PHASE LUMEN

Strap and clasp (max. 10 points): The hand-stitched alligator strap is well crafted and the platinum folding clasp is neatly polished. **9**

Operation (5): A button is used to adjust the date; the seconds hand stops moving when the crown is pulled out. **4**

Case (10): The platinum case is very well crafted and perfectly polished. **10**

Design (15): The Lange 1 is a design icon and fully deserves to be one. Now a semitransparent dial makes it look more modern. **14**

Legibility (5): The outsize date display and the time are readily legible, but the real show doesn't start until the sun goes down. **5**

Wearing comfort (10): This watch is pleasantly slim and lightweight, and the strap is supple, but the folding clasp didn't fit well on our wrist. **8**

Movement (20): The *manufacture* movement with a power-reserve indicator, an outsize date and a moon-phase display offers attractive manually crafted engravings and polished patterns. **18**

Rate results (10): Slight average deviation and only one outlier among the individual positions, but the decline in amplitude could be somewhat smaller. **8**

Overall value (15): The high price is only partly explained by the elaborate craftsmanship. **11**

TOTAL: **87 POINTS**

dial's legibility. In fact, thanks to the luminous substance and the dark but UV-permeable crystal, this watch is even easier to read than the standard Grand Lange 1. But above all, the Moon Phase Lumen is appealing because of its street-chic design, which gives this model a unique status in Lange's otherwise classical collection. **○**



S.A.R. Rescue-Timer



The function and design of the S.A.R. Rescue-Timer were to a large extent determined by the captains in the German Maritime Search and Rescue Service. This practical orientation resulted in an exceptionally robust watch able to meet any challenge. Since it was first developed, the S.A.R. Rescue-Timer has been in long-term operation on the 56 rescue cruisers of the German Maritime Search and Rescue Service, with which we still constantly exchange ideas and experience.

www.muehle-glashuette.de

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FOR THE RECORD

BY ROGER RUEGGER

Since its launch in 1999, Richard Mille has already achieved a couple of firsts in the world of haute horlogerie. Since 2010, the brand has also been regularly breaking records on the wrists of some of the athletes it sponsors, sometimes even without being the official timekeeper of the event in which they're competing. We look at some of the recent achievements, and the watches worn:

WAYDE VAN NIEKERK

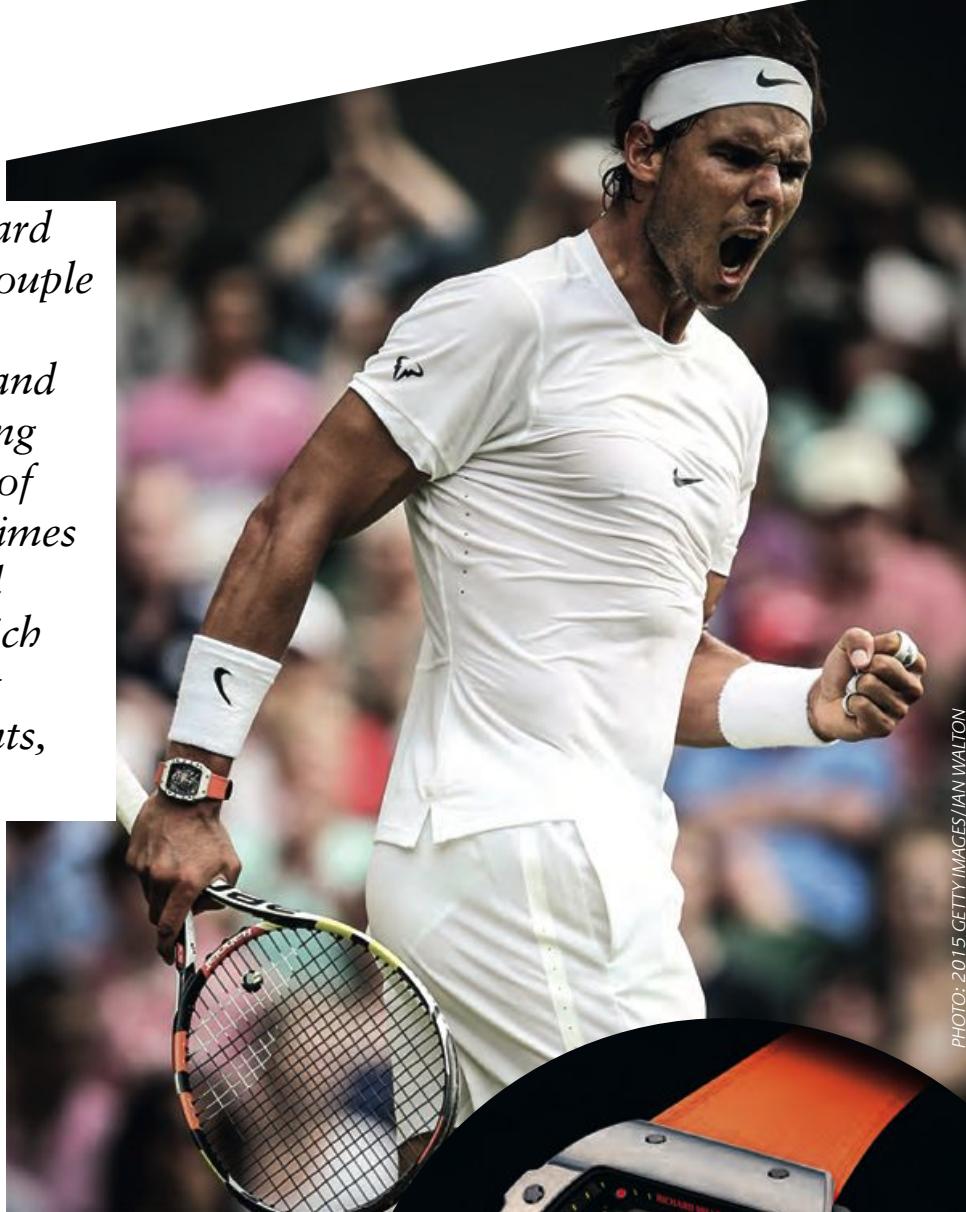
Wayde van Niekerk (born July 15, 1992), pictured at left, is a South African track and field sprinter who usually competes in the 200 meters and 400 meters. He not only won the gold medal in the 400 meters at the 2016 Summer Olympics in Rio with a world record, but also became the first person to run faster than 10 seconds for 100 meters, 20 seconds for 200 meters, and 44 seconds for 400 meters in 2016.

So for once, running fast is a good thing when it comes to watches, because van Niekerk was actually wearing the tonneau-style Richard Mille 27-02 when he won his gold medal in Rio. The 27-02 (first introduced in 2015) features a manually wound movement with a tourbillon, which offers about 70 hours of power reserve (or 69 hours, 59 minutes and 6.93 seconds more than van Niekerk would have needed to break the 400-meter world record in Rio) and weighs an astounding 3.35 grams. While its baseplate is made of titanium, the caseback and bezel are made of NTPT carbon (North Thin Ply Technology) and Quartz TPT, a Richard Mille-exclusive light-weight material composed of over 600 layers of parallel filaments obtained from separating silica threads. This also guarantees that each of the 50 watches produced looks different.

Another specialty of the RM 27-02 is the direct integration of the manual-wind movement into the case, which makes the construction extremely resistant to shocks (it can withstand accelerations of over 5,000 Gs), which may be less important for a sprinter than for, let's say, one of the undoubtedly greatest players in tennis history:

RAFAEL NADAL

Spanish professional tennis athlete Rafael "Rafa" Nadal Parera (born June 3, 1986) is currently ranked as the world No. 5 and left Rio with a gold medal for men's doubles. He was, of course, not only the first athlete to wear the RM 27-02 in 2015, but also one of the reasons the range was developed in the first place – a "huge challenge" according to Richard





Mille himself since pretty much everything needed to be redesigned for the athlete's needs.

Nadal was first seen wearing a watch on court (the RM 027) in 2010 and received an upgraded and more colorful model in 2013, the RM 27-01. With a record-breaking weight of 19 grams, the RM 27-01 weighed one gram less than its predecessor. But it also cost about a seventh of the prize money you can currently expect to pocket when winning the US Open tennis championship (which the “King of Clay” won in 2010 and 2013). The latest version, the RM 27-02, is priced at \$775,000, which represents one-fifth of the actual prize money.

YOHAN BLAKE

Yohan Blake (born December 26, 1989) is a Jamaican sprinter. He won gold in the 100 meters at the 2011 World Championships as the youngest 100-meter world champion ever, and silver in the 2012 Olympic Games in London in the 100-meter and 200-meter races (wearing a prototype Richard Mille watch in Jamaica's national colors). Since 2013, “The Beast” is wearing the more aerodynamic, asymmetrical RM 59-01 with tourbillon and lightweight composite case. List price is \$620,000.

In Rio, Blake won his second career Olympic gold in the 4-by-100-meter relay.



RM 59-01

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GERRY LESTER WATSON, JR.

Like Blake, American Golf pro "Bubba" Watson (born November 5, 1978) is left handed. And, of course, he's regularly seen wearing a watch from Richard Mille when competing (for example, when he won the 2012 Masters Tournament). He is a multiple major champion and reached a career-high second place in the 2015 Official World Golf Ranking. Just recently, he (unofficially) broke the world record for the fastest birdie by making an eagle in 23 seconds.

While Watson did not return from Rio with a medal, he was spotted wearing either the tonneau-style RM 038 or 055 (of which the 2014 version RM 38-01 is equipped with a patented G-sensor) during the games.

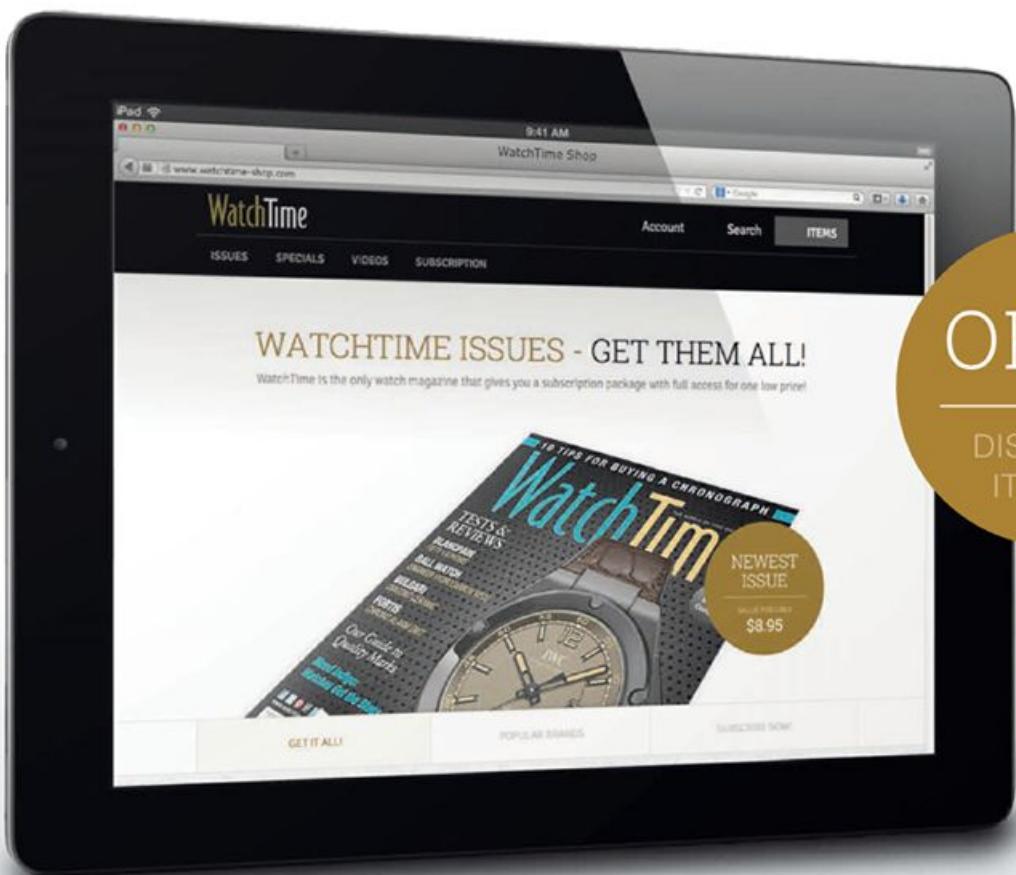
The RM 38-01 comes with a green (Watson's favorite color) ceramic bezel and caseback; the case is titanium with a white rubber coating. Opposite the tourbillon, at the 12 o'clock position, is the G-sensor that allows him to measure swings in Gs (up to 20 Gs of acceleration) – particularly interesting for someone known for hitting a ball at more than 190 miles per hour. The power reserve is 48 hours and the watch is limited to 50 pieces as well. ○



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TAKE THE PLUNGE

We subject dive watches from Doxa, Seiko and TAG Heuer to the rigors of training with emergency response rescue divers.

Were the watches up to the challenge?

BY MARTINA RICHTER

PHOTOS BY MARCUS HEILSCHER, UHREN-MAGAZIN AND THE MANUFACTURERS





Emergency rescue personnel and our staff in front of the diving tower in Koblenz



o test dive watches from Doxa, Seiko and TAG Heuer, our team went to the training center for fire protection and disaster management in Koblenz, Germany. Rescue divers receive emergency response training in the center's large diving tower, which measures 41 feet high and 12.5 feet wide. The entrance to the tower is located at the top, in a turret that contains control and observation monitors. The Doxa SUB4000T Professional, the Seiko Prospex Marinemaster Professional 1000m Diver's and the TAG Heuer Aquaracer 300m Calibre 5, our test watches, were ready to accompany the rescue divers during their training session. Josef Helpenstein, head of the diving department, guided fire inspector Lukas Leitz and fire chiefs Jörg Johann, Kyrill Otten and Benjamin Kadenbach through their emergency rescue drills.

In a real-life rescue operation, the dive commander determines all aspects of the dive while remaining on land. "In emergency situations, the rescue diver may be alone in the water and will often see very little or nothing at all in a rushing current or a murky lake. The diver is connected via a cable and telephone and receives precise directions that must be followed exactly," said Helpenstein, who explained emergency dives and how they differ from recreational ones. He explained that the dive commander determines the length of the dive as well

as ascent and decompression. Fire department rescue divers can descend to 30 meters in depth. "Beyond that, there's nothing left to save," Helpenstein said, bluntly stating the seriousness of a rescue diver's mission. And because the divers also must consider their own lives and safety, Helpenstein permits no compromises during the practice sessions. The same level of precaution was taken during our visit with one exception: in this session, the divers strapped our test watches to their wrists or over their wetsuits.

OTTEN CHOSE to wear the Doxa SUB4000T because its orange dial reminded him of the sporting color of his native country, the Netherlands. Leitz took the Seiko Prospex Marinemaster Professional 1000m Diver's because it seemed similar to his Citizen, which he considers to be the *ne plus ultra* in diving, though the Seiko has much larger dimensions. Johann opted for the slimmer TAG Heuer Aquaracer 300m Calibre 5 to fit his slender wrist. "But the strap is longer than you'd guess at first glance," he noted when putting the watch on. He was also pleasantly surprised by the smooth adjustment of the water-resistant nylon strap and its pressure-fit clasp. While it does not replace a true divers' extension, TAG Heuer does offer this option for the Aquaracer model with a stainless-steel bracelet.



1 Marcus Heilscher photographs the testing process.

2 Lukas Leitz reports on his underwater experience with the Seiko watch.

3 Martina Richter discusses the testing procedure with the divers.

4 Lukas Leitz, Kyrill Otten and Jörg Johann (left to right) at work in the diving tower





THE GROOVES ON THE DOXA'S BEZEL ARE ANGLED AGAINST THE DIRECTION OF ROTATION TO FACILITATE SETTING THE DIVE TIME.

All the divers agreed that the best strap for a dive watch is the sturdy silicone strap on the Seiko, even though Leitz found it to be a bit too short. And although the Seiko's gold-plated titanium buckle seems rather plain, the accordion-type strap works very well. The folds at the case expand and contract with a neoprene wet suit as it changes with the water pressure. The stainless-steel bracelet on the Doxa can't compete with this dynamic option. But you can lengthen or shorten the Doxa's bracelet without opening the clasp or taking off the watch completely using the pressure-fit folding clasp. All Doxa dive watches have stainless-steel bracelets and folding clasps.

THE GROOVES ON the Doxa's rotating bezel are angled against the direction of rotation, which Otten liked. He found that the angle makes it easy to set the dive time even when wearing gloves. The ring has minutes markings throughout and

ratchets cleanly, although its half-minute increments are not considered standard. The same is true for the Seiko. However, Leitz found that the shape of the Seiko's case makes it impossible to grasp the smoothly clicking rotating bezel at every point. But the shape of the outer ceramic



SPECS

DOXA SUB4000T PROFESSIONAL

Manufacturer: Doxa SA, Rue de Zurich 23, 2500 Biel/Bienne 8, Switzerland

Reference number: 875.10.351.10

Functions: Hours, minutes, central seconds, date, power-reserve indicator, rotating dive bezel and U.S. Navy dive table, helium valve

Movement: ETA 2897 based on ETA 2827, automatic, 28,800 vph, 42-hour power reserve, gold-plated nickel balance, Nivarox balance spring, Etachron fine adjustment, Incabloc shock absorption, 21 jewels, diameter = 25.6 mm, height = 4.8 mm

Case: Stainless steel, curved sapphire crystal with nonreflective coating on outside, water resistant to 1,200 m

Bracelet and clasp: Stainless-steel bracelet, pressure-fit folding clasp with dive extension

Rate results:

Deviations in seconds per 24 hours
(Fully wound / after 24 hours)

Dial up	+7.0 / +6.3
Dial down	+5.5 / +0.2
Crown up	-2.1 / -5.4
Crown down	+1.1 / -1.5
Crown left	+4.7 / +1.1
Greatest deviation of rate	9.1 / 11.7
Average deviation	+3.2 / +0.1

Average amplitude:

Flat positions	303° / 282°
Hanging positions	261° / 247°

Dimensions: Diameter = 46.82 mm, height = 16.55 mm, weight = 258 g

Variations: Sharkhunter model with black dial

Price: \$2,990

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SPECS

SEIKO PROSPEX MARINEMASTER
PROFESSIONAL 1000M DIVER'S

Manufacturer: Seiko Watch Corp., 8-10, Toranomon 2-Chome, Minato-ku, Tokyo 105-8467, Japan

Reference number: SBDX014

Functions: Hours, minutes, central seconds, date, rotating dive bezel, helium seal

Movement: In-house 8L35, automatic, 28,800 vph, 50-hour power reserve, in-house balance, Spron balance spring, standard fine adjustment, Diachoc shock absorption, 26 jewels, diameter = 28.4 mm, height = 5.3 mm

Case: Titanium with rose gold and titanium carbide/ceramic, sapphire crystal with nonreflective coating on front, water resistant to 1,000 m

Strap and clasp: Silicone strap with gold-plated titanium buckle

Rate results:

Deviations in seconds per 24 hours
(Fully wound / after 24 hours)

Dial up	-7.2 / -6.4
Dial down	-5.6 / -2.8
Crown up	-7.7 / -8.0
Crown down	-7.1 / -6.2
Crown left	-3.6 / -3.3
Greatest deviation of rate	4.1 / 5.2
Average deviation	-6.2 / -5.3

Average amplitude:

Flat positions	308° / 265°
Hanging positions	273° / 246°

Dimensions: Diameter = 53.12 mm, height = 17.31 mm, weight = 160 g

Price: \$3,300

case is designed for better shock absorption and prevents unintentional shifting of the bezel.

The Seiko's two-part case is a distinctive feature of the brand's dive watches. Thanks to a special inner structure with L-shaped gaskets and a screwed ring securing the sapphire crystal, the Seiko is water resistant to 1,000 meters. It also has a helium seal, making it suitable for saturation diving. Our test watch is part of a limited edition that was issued to mark the 50th anniversary of Seiko dive watches.

Compared to the Seiko, the TAG Heuer offers more in the way of style. Johann felt he could easily wear the Aquaracer on dry land after the dive. However, he said that he needed to concentrate when using the watch's rotating bezel: the 12-sided, faceted ceramic ring was easy to grasp, thanks to the six chamfers, and it had excellent clicking



ratchets, but not in minutes increments. And the ring had minutes markings only for the first quarter. Otherwise, Johann was generally pleased with the legibility of the TAG Heuer due to its luminous hands, large markers and a magnifier above the date.

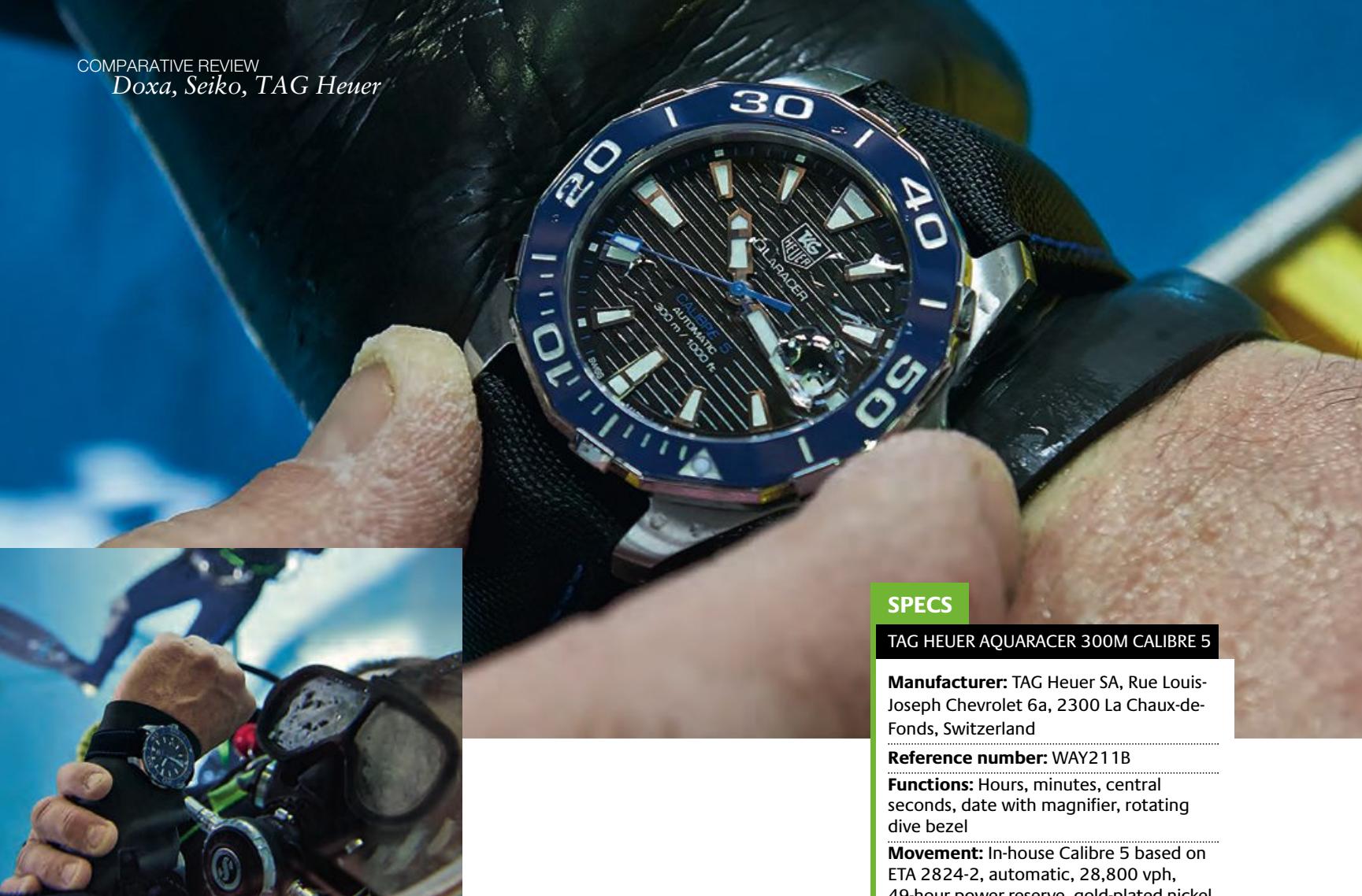
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THE TAG HEUER'S BEZEL IS EASY TO GRASP BUT DOES NOT RATCHET IN MINUTES INTERVALS.

Leitz and Otten also liked the legibility of the Seiko and Doxa watches. Besides improved Lumibrite luminous material on the bar markers, round dots and triangles, the different hand shapes could be easily distinguished while diving. And on the Seiko, proper functioning can be confirmed by the glowing shorter end of the seconds hand – an unusual but effective feature. The Doxa has a rotating square on the seconds hand that is placed exactly where the luminous markers end. The large minutes hand, which dominates the dial, is typical for the brand. This important functional feature, plus 1,200-meter water resistance and an automatic helium valve, make the Doxa SUB4000T

a true professional dive watch.

We found that the in-house Seiko movement 8L35 showed consistent losses while the TAG Heuer's ETA-based Calibre 5 and the Doxa's ETA 2897 were both slightly irregular. If we look only at the Doxa's nearly flawless dive bezel, functional dial design and bracelet-clasp system, this watch has a slight edge over the Seiko, even though the Seiko was the favorite among the divers. Its advantage over the TAG Heuer was also slim although the Aquaracer fell slightly behind in bezel functionality and dial design. The professional quality of all three watches made it difficult to determine a winner in this test. ○

SPECS

TAG HEUER AQUARACER 300M CALIBRE 5

Manufacturer: TAG Heuer SA, Rue Louis-Joseph Chevrolet 6a, 2300 La Chaux-de-Fonds, Switzerland

Reference number: WAY211B

Functions: Hours, minutes, central seconds, date with magnifier, rotating dive bezel

Movement: In-house Calibre 5 based on ETA 2824-2, automatic, 28,800 vph, 49-hour power reserve, gold-plated nickel balance, Nivarox balance spring, Etachron fine adjustment, Incabloc shock absorption, 25 jewels, diameter = 25.6 mm, height = 4.6 mm

Case: Stainless steel and ceramic, sapphire crystal with nonreflective coating on outside, water resistant to 300 m

Strap and clasp: Nylon strap with pressure-fit folding clasp

Rate results:

Deviations in seconds per 24 hours
(Fully wound / after 24 hours)

Dial up	+3.7 / +9.5
Dial down	+1.5 / +8.4
Crown up	+3.1 / +6.1
Crown down	+6.1 / +10.1
Crown left	+0.8 / +2.7
Greatest deviation of rate	5.3 / 7.4
Average deviation	+3.0 / +7.4
Average amplitude:	
Flat positions	305° / 261°
Hanging positions	287° / 175°

Variations: With blue dial and stainless-steel bracelet (\$2,550)

Price: \$2,400

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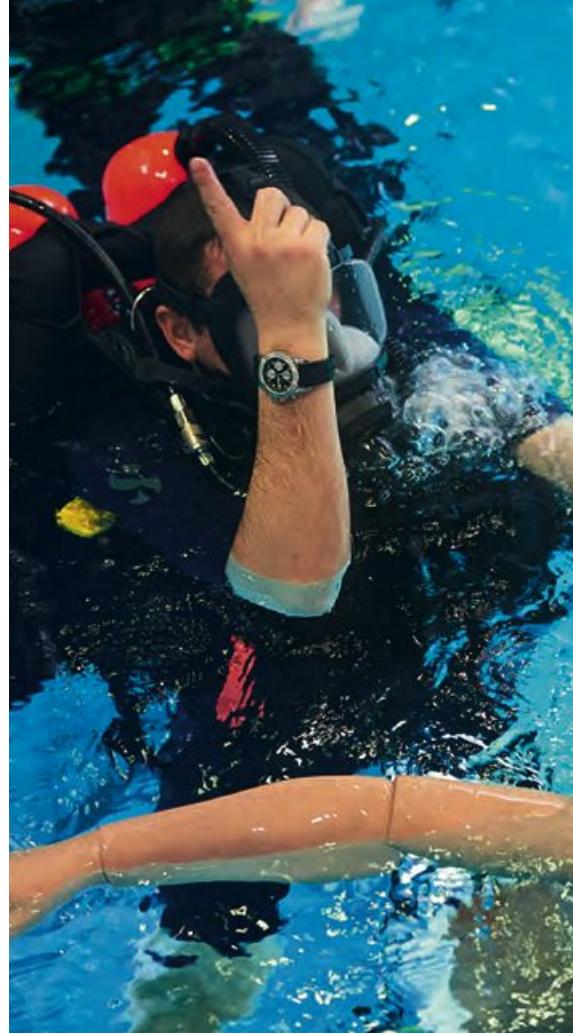
RESCUE

Dive watches from Breitling, Mido, Oris and Sinn go under water with emergency response rescue divers who are practicing saving lives. How well did the watches survive the ordeal?

BY MARTINA RICHTER

PHOTOS BY MARCUS HEILSCHER, UHREN-MAGAZIN
AND THE MANUFACTURERS

READY



S

aving lives is the most important job for emergency rescue divers. In this second training exercise at the diving tower in Koblenz, Germany (see previous article), the divers from the school for fire protection and rescue management practice saving people (actually lifeless dummies) who are trapped in a sunken automobile. And then the divers show how the car is retrieved from the water. After the drill, divers Lukas Leitz, Jörg Johann and Benjamin Kadenbach showed signs of fatigue. So we wanted to find out how well our four test watches: the Breitling Colt Chronograph Automatic, the Mido Multifort Chronograph Caliber 60, the Oris Pro Diver Chronograph, and the Sinn U1000 (EZM 6), performed during the rescue mission and survived the ordeal.

The divers evaluated each of the test

watches separately, but they agreed on several key points. They preferred a watch with a rubber strap, especially one that has elastic segments. They found the color blue to be problematic when diving. And they found that a stopwatch function wasn't entirely necessary, unless it can be used to measure the dive time, as it can on the Sinn.

The divers also liked the high functionality and legibility of the Sinn. They found the Breitling and the Oris to be worthy competitors. And they found that a lower-priced model, e.g., the Mido, meant you have to accept a few cutbacks. But fortunately, the divers found no reason to question the functionality of any of our test watches, including the least costly one. We take a close look at each watch.



BREITLING

The chronometer-certified Breitling Colt Chronograph is built to perform, with a case that's 44 mm in diameter and water resistant to 200 meters.

Fire chief Benjamin Kadenbach manipulates the Breitling Colt Chronograph's pressure-activated folding clasp. By pressing a button, and without slipping the watch off his wrist, he can incrementally lengthen or shorten the black Ocean Racer rubber strap by nearly four-tenths of an inch. This would have been a useful feature for a diver wearing a neoprene diving suit, but the watch wouldn't fit over his sleeve. Fortunately, Breitling offers alternate straps.

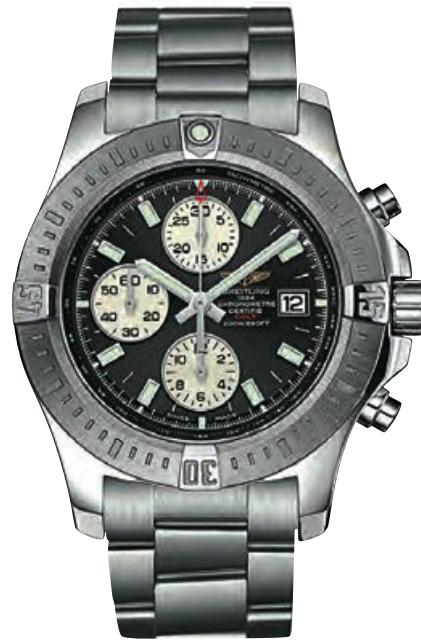
Kadenbach's first glance at the dial prompts him to say, "This watch is extremely legible!" Bold contrasts on the dial, combined with a sapphire crystal that has nonreflective treatment on both sides, assure outstanding legibility.

The time of day is always easy to read despite several different type styles, filigree scales and pale subdials – even during our test in the diving tower, as our divers confirmed when they emerged from the water.

Thanks to the four raised areas on the divers' bezel, the ring is easy to grasp, even with wet hands or while wearing gloves. This makes it easy for a diver to adjust the bezel while he's in the water or seated on the edge of a pool. Single minutes markers go around the entire rotatable ring, which clicks reliably into place in half-minute increments. The chronograph mechanism is also easy to operate under water. The push-pieces protrude from cylinders and are not screwed. However, the crown has burly protectors on either side. These features, along with the massive screwed caseback, assure that the Colt's steel case can resist pressure to 200 meters.

The case contains Breitling's Caliber 13, which is based on an ETA movement that's undergone fine tuning to uphold Breitling's chronometric standards.

We found that this instrument-like timepiece is optimally legible, easy to operate on dry land and in the water, and runs with well-balanced rate values.



SPECS

BREITLING COLT CHRONOGRAPH AUTOMATIC

Manufacturer: Breitling SA, Schlachthausstrasse 2, 2540 Grenchen, Switzerland

Reference number: A1338811/BD83

Functions: Hours, minutes, small seconds, chronograph (central elapsed-seconds hand, counter for 30 elapsed minutes and 12 elapsed hours), date, divers' bezel, tachymeter scale

Movement: Breitling 13, modified base ETA 7750, automatic, COSC-certified, 28,800 vph, 42-hour power reserve, Glucydur balance, Nivarox balance spring, eccentric fine adjustment, Incabloc shock absorption, 25 jewels, diameter = 30 mm, height = 7.9 mm

Case: Stainless steel, sapphire crystal with nonreflective coating on both sides, water resistant to 200 m

Strap and clasp: Black Ocean Racer rubber strap; pressure-activated single folding clasp with integrated divers' extension

Rate results:

Deviations in seconds per 24 hours

Fully wound	+2.2
With chronograph on	+1.8
After 24 hours	+2.3
On the wrist	+1.8

Dimensions: Diameter = 43.84 mm, height = 14.68 mm, weight = 168 g

Variations: With silver-colored or blue dial; with black Diver Pro III rubber strap (\$4,800); with Professional III bracelet (\$5,300)

Price: \$5,100



MIDO

Although the Mido Multifort is 80 years old, chronograph Caliber 60 is inarguably modern thanks to bold architecture and a movement that can run for 60 hours between windings.

The impression made by the Multifort Chronograph is no less powerful than the one made by Australia's Sydney Harbour Bridge, which was the inspiration for this watch's styling. The model features a massive, 44-mm, stainless-steel case, five screwable operating elements and a distinctively structured dial with a steeply rising flange.

The flange, which serves as a divers' bezel, can be adjusted via one of the crowns. "This has advantages and disadvantages," Lukas Leitz says. "The downside: I can't bring the bezel into position immediately before beginning a dive, and the crown is difficult to operate while wearing gloves. But the good news is that after the operating button has been screwed shut, it's impossible to turn the ring unintentionally." Leitz finds it a bit clumsy to slip the stainless-steel bracelet over the sleeve of his diving suit. Mido

doesn't offer an alternative strap. Fortunately, the folding clasp is equipped with a divers' extension and a safety bow.

The case is water resistant to 200 meters and has a sapphire caseback, through which you can view the exclusive 2014 Caliber 60. The movement amasses 60 hours of power and runs with rather well-balanced rate results, but gains somewhat amply. Another disadvantage is that the rapid-reset function for the date display isn't operated via the crown, but by pressing one of the watch's large buttons (the one at 10 o'clock).

Leitz says that many elements in the watch's design detract from its legibility. The luminous orange color on the divers' bezel glows more faintly than the bluish color on the time display. The time display can be set very precisely, but unfortunately lacks to-the-minute calibrations around the entire dial.

We found that this big stainless-steel watch makes a powerful impression on the wrist, but operating the interior divers' bezel via the crown is a bit cumbersome.



SPECS

MIDO MULTIFORT CHRONOGRAPH CALIBER 60

Manufacturer: Mido SA, Ch. Des Tourelles 17, 2400 Le Locle, Switzerland

Reference number: A1338811/BD83

Functions: Hours, minutes, small seconds, chronograph (central elapsed-seconds hand, counter for 30 elapsed minutes), date, interior divers' bezel

Movement: Caliber 60, modified base ETA A05H031, automatic, 28,800 vph, 60-hour power reserve, Glucydur balance, Anchron balance spring, eccentric fine adjustment, Nivachoc shock absorption, 27 jewels, diameter = 30 mm, height = 7.9 mm

Case: Stainless steel, sapphire crystal with nonreflective coating on both sides, mineral glass on caseback, water resistant to 200 m

Bracelet and clasp: Stainless steel, single folding clasp with safety bow and divers' extension

Rate results:

Deviations in seconds per 24 hours

Fully wound	+8.4
With chronograph on	+7.5
After 24 hours	+7.7
On the wrist	+7.1

Dimensions: Diameter = 44.14 mm, height = 15.61 mm, weight = 232 g

Variations: With various dials; with black PVD-coated case (\$2,300)

Price: \$2,230

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ORIS

The Oris Pro Diver Chronograph was developed with and for professional divers. The watch's professional features make it a hardworking tool watch.

In Jörg Johann's opinion, the Pro Diver Chronograph is a bit too large (50 mm), especially when he compares it with the Sinn watch that he's wearing on his other wrist (44 mm). He also feels that the numerous small and finely detailed scales somewhat overcrowd the Pro Diver's face. Nonetheless, the time display remains predominant and readily legible under all conditions. Oris has done everything right on the calibrated scales, including the one on the bezel: the ceramic inlays form a complete circle of single-minute markings. And once the wearer understands the Rotating Safety System, setting the intended dive time is a secure process. The rubber coating assures a good grip when the outer ring is pulled out, even while wearing gloves. The bezel clicks authoritatively through half-minute increments until it has been

brought into its desired position; then the wearer presses the ring downward again. This not only ensures that the bezel remains firmly in place during the dive, but also helps protect it against shocks.

The titanium bracelet is positioned between pairs of lugs that bend a long way downward, thus assuring that this big watch fits surprisingly well, even on a narrow wrist. A divers' extension is integrated into the pressure-activated folding clasp. Oris delivers this watch with an additional rubber strap equipped with a fold-and-shift closure that lets the wearer vary the band's length without having to slip the watch off his wrist.

This convenient feature appeals to the professional divers for whom the Pro Diver Chronograph is built. Alongside its instrument-like appearance, this model also offers water resistance to 1,000 meters, a helium-escape valve and a table on the watch's massive caseback for converting between meters and feet.



SPECS

ORIS PRO DIVER CHRONOGRAPH

Manufacturer: Oris SA, Ribigasse 1, 4434 Höllstein, Switzerland

Reference number: 01 774 7727 7154 (Set)

Functions: Hours, minutes, small seconds, chronograph (central elapsed-seconds hand, counters for 30 elapsed minutes and 12 elapsed hours), date, divers' bezel, automatic helium valve

Movement: Oris 774, modified base Sellita SW 500, automatic, 28,800 vph, 50-hour power reserve, gold-plated nickel balance, Nivarox balance spring, eccentric fine adjustment, Incabloc shock absorption, 25 jewels, diameter = 30 mm, height = 7.9 mm

Case: Titanium, stainless steel and ceramic; curved sapphire crystal with nonreflective coating on the inside; water resistant to 1,000 m

Strap and clasp: Titanium bracelet with pressure-activated, single folding clasp with integrated divers' extension; additional rubber strap

Rate results:

Deviations in seconds per 24 hours

Fully wound	+2.9
With chronograph on	+3.3
After 24 hours	+3.9
On the wrist	+4.3

Dimensions: Diameter = 50.38 mm, height = 19.68 mm, weight = 214 g

Price: \$4,750

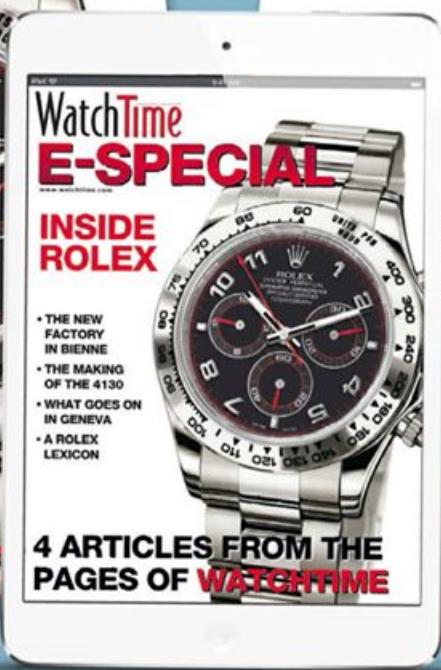


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SINN

The Sinn U1000 is a professional divers' watch that was developed purely to serve the functions associated with its mission. It boasts a variety of high-tech features.

Immediately before starting his dive, Jörg Johann activates the chronograph mechanism of the U1000. He is delighted to discover that the large, non-screwed, shaped buttons on the left side of the case are easy to operate.

Caliber SZ 02, which Sinn has created by specially modifying an ETA 7750, makes it very practical for divers to measure brief intervals of time. The elapsed minutes, which are the most important piece of information, are intuitively readable on a counter at 6 o'clock that can tally an unusually long interval of 60 minutes' duration. This assures that a diver always has the dive time clearly in view, while simultaneously providing him with a backup control to augment the positioning of the divers' bezel, Johann notes. The rotatable ring, which is designed to be "impossible to lose," is also user friendly. Twenty-four indentations along its rim assure a secure grip, even while wearing gloves. The scaling is exemplary and the ring clicks surely into place in single-

minute increments. To set the ring, the diver simply presses it inward. When he releases the pressure, the ring can no longer be rotated without applying pressure again.

The U1000 Chronograph's case is made of strong submarine steel, which resists corrosion by seawater. Furthermore, Sinn has used its special surface treatment called "tegiment" technology to harden the case and make it especially resistant to scratches. A variety of other constructive details, e.g., special insulators for the push-pieces and crown, as well as stay-dry technology, enable the U1000 to resist pressure to 1,000 meters, safeguard it against low pressure, and guarantee that it remains functional at temperatures ranging from -45°C (-49° F) to +80° C (+176° F). And this professional divers' watch is tested and certified according to the European standards for diving equipment.

This watch is part of Sinn's EZM (mission timepiece) series and is extremely robust and highly legible. Operation from the left-hand side isn't only practical; it also maximizes comfort on the wrist.



SPECS

SINN U1000 (EZM 6)

Manufacturer: Sinn Spezialuhren, Im Füldchen 5–7, 60489 Frankfurt, Germany

Reference number: 1011.1597

Functions: Hours, minutes, small seconds, chronograph (central elapsed-seconds hand, counters for 60 elapsed minutes and 12 elapsed hours), date, divers' bezel

Movement: In-house SZ 02, modified base ETA 7750, automatic, 28,800 vph, 42-hour power reserve, Glucydur balance, Nivarox balance spring, eccentric fine adjustment, Incabloc shock absorption, 25 jewels, diameter = 30 mm, height = 7.9 mm

Case: Submarine steel, curved sapphire crystal with nonreflective coating on both sides, water resistant to 1,000 m

Strap and clasp: Silicone strap with pressure-activated, single folding clasp with integrated divers' extension

Rate results:

Deviations in seconds per 24 hours

Fully wound	+0.3
With chronograph on	-2.7
After 24 hours	-1.7
On the wrist	-0.6

Dimensions: Diameter = 43.99 mm, height = 18.13 mm, weight = 210 g

Variations: With steel bracelet (\$4,780); with calf leather strap (\$4,530)

Price: \$4,690



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[Omega Speedmaster "Dark Side of the Moon"](#)

Since its 1957 debut, Omega's Speedmaster "Moonwatch" had sported a tricompax dial arrangement. In 2011, Omega outfitted the watch with a new co-axial movement and bicompass design, both of which are used again in the first Moonwatch with a black ceramic case.

[Click here to read more](#)



[Panerai Luminor 1950 Regatta 3 Days Chrono](#)

Panerai has been involved in yacht racing since 2005; it was probably inevitable that the brand would eventually release a watch for yachtsmen. That timepiece, which contains a brand-new movement and carries the reference number PAM00526, makes its debut this year.

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[Ulysse Nardin Marine Chrono Manufacture](#)

Ulysse Nardin's journey toward more in-house movement production continued apace at this year's Baselworld, when the brand released its new Marine Chronograph Manufacture.



[Patek Philippe Unveils New Calatravas](#)

At this year's Baselworld, Patek Philippe introduced the new Ref. 5227, a new version of its classic Patek Philippe Calatrava watch in a slightly larger case and a new, hinged dustcover over the exhibition caseback.



[10 Celebrity-Branded Sports Watches](#)

Many celebrities serve as "brand ambassadors," but only a few become involved in the process of creating their own personalized timepieces. Here are 10 famous-name watches from seven brands.

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4 DEEP-SEA DIVERS

These extreme divers' watches are reliable companions for adventurers who explore the darkness under the sea.

BY ALEXANDER KRUPP

PHOTOS BY PEXELS.COM AND THE MANUFACTURERS



2,000 Meters

MÜHLE-GLASHÜTTE RASMUS 2000

The Glashütte-based brand developed this watch in collaboration with research scientists from the University of Rostock, Germany. The 44-mm stainless-steel case has an easy-to-grasp rotatable bezel and an inner case of soft iron to protect the movement against magnetic fields. It is water resistant to 2,000 meters. Mühle's modified version of the Sellita self-winding Caliber SW 200 ticks behind a black, blue or orange dial. Price: \$4,099.



3,000 Meters

BREITLING AVENGER II SEAWOLF

The Avenger II Seawolf is water resistant to 3,000 meters and has an attention-getting color scheme that calls to mind the unusual creatures that dwell at such depths. Self-winding Breitling Caliber 17, which is based on ETA's 2824, is COSC-certified and ticks beneath the bright yellow dial. The case is steel and 45 mm in diameter. Price: \$3,825.



4,000 Meters

HUBLOT KING POWER OCEANOGRAPHIC EXO 4000

Few divers' watches can descend to 4,000 meters. Hublot's Oceanographic is one of the rare exceptions. This model's most recent variation has a 48-mm carbon-fiber case and a rubber strap that's inlaid with white synthetic fibers. The timekeeping tasks are performed by automatic HUB 1401, which is based on an ETA 7750 that has been stripped of its chronograph mechanism. Price: \$25,900.



12,000 Meters

DEEPSSEA CHALLENGE

Movie director James Cameron brought this watch along when he descended into the Mariana Trench in March 2012. The watch measures 28.5 mm in thickness and 51.4 mm in diameter. Thanks to a 14.3-mm-thick sapphire crystal and a reinforced titanium caseback, the watch's steel case and in-house automatic Caliber 3135 inside survived the plunge, despite the fact that the Deepsea Challenge was strapped to an exterior gripper arm outside Cameron's special submersible, which dove to a depth of 10,898 meters. According to the Deepsea Challenge's specified level of water resistance, the watch could have kept functioning more than 1,000 meters farther below the surface to a depth of 12,000 meters. This watch is not for sale.

BUILT FOR ADVENTURE

If you want to climb mountains, explore caverns, or undergo underwater ordeals, these watches will blithely master such extreme situations. But their attributes can also be useful in everyday life.

BY JENS KOCH

PHOTOS BY PIXABAY.COM, PEXELS.COM AND THE MANUFACTURERS

Light Fantastic

BALL WATCH ENGINEER HYDROCARBON BLACK

A watch designed for extreme missions must be easy to read in every situation. When nighttime legibility is at stake, everything depends on how long the dial's luminous material continues to glow. Some watches can be read after eight hours in darkness, but even Super-LumiNova gives up the ghost if the gloom lasts much longer. This is not the case when the dial's illumination relies on tritium gas. Here, little glass tubes are coated with a luminous substance on their inner surfaces and filled with safely captured tritium, which activates the luminescent material that lines the tubes. The tubes continue to gleam brightly, even after spending years in total darkness. Watches equipped with these luminous tubes are frequently used by the military and by members of the Special Forces. Ball Watch uses this technique in its Engineer Hydrocarbon Black, which has a titanium case coated with black DLC, a scratch-resistant ceramic bezel and a 5.3-mm-thick sapphire crystal. A patented system protects the crown against impacts. Ball Watch uses another patented system to modify the shock absorbers for the balance so the watch is more resistant to vibrations. Ball's self-winding caliber, which is based on Sellita's SW 200, is COSC certified. This 42-mm watch is water resistant to 300 meters. Price: \$4,699.





Brawn in the Brine

IWC AQUATIMER AUTOMATIC 2000

Saltwater can cause pitting in the surface of a watch's steel case. The case can become speckled with tiny holes, behind which lurk larger cavities. Steel's ability to resist corrosion by saltwater is measured by its PRE value: PRE means "pitting resistance equivalent." A PRE value of 32 is considered to be resistant to corrosion by seawater. Higher PRE values provide greater resistance. Most steel cases are made from 316L steel, which has a PRE value of only 24. These cases should always be rinsed in fresh water after exposure to seawater. Rolex's cases are made from 904L steel, which has a PRE value of 35, and is quite resistant to corrosion by saltwater. The submarine steel that Sinn uses for its divers' watches has a PRE value of 38. But titanium is an even better choice for watch cases because this metal is totally impervious to corrosion by saltwater. The IWC Aquatimer Automatic 2000 has a titanium case. It is water resistant to 2,000 meters and is equipped with self-winding in-house Caliber 80110. Price: \$9,500.

Taking the Field

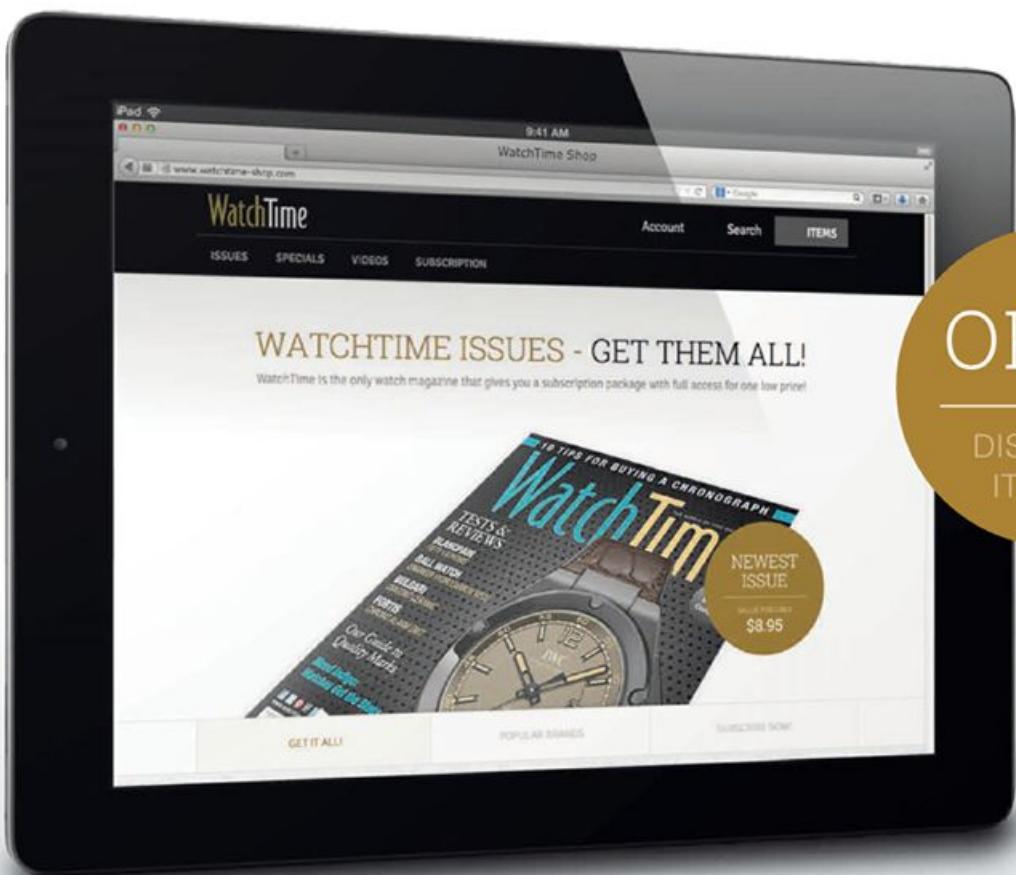
OMEGA SEAMASTER PLOPROF 1200M

Magnetic fields can damage watches. Parts of the movement can become lastingly magnetized, which severely interferes with the accuracy of the rate. The invisible force of magnetism lurks in our everyday surroundings: for example, stereo loudspeakers or smartphones generate magnetic fields. The best protection from magnetism is offered by Omega's Master Chronometer in-house movements, which have been certified by METAS (Switzerland's Federal Institute for Metrology). Antimagnetic materials inside these watches ensure that they can cope with magnetic fields up to 15,000 gauss. This protection is 15 times greater than that provided by a conventional soft-iron inner case. The Omega Seamaster Ploprof 1200M is powered by Omega Master Chronometer Caliber 8912. It has a 48-mm titanium case. The watch's ceramic diving bezel is released and locked by a distinctive pusher at 2 o'clock. The crown is protected by a bracket that cannot be opened until the crown is unscrewed. The Ploprof is water resistant to 1,200 meters. Price: \$13,800.



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Up to Scratch

PANERAI LUMINOR 1950 3 DAYS GMT

AUTOMATIC CERAMICA

Scratch-resistant cases aren't only useful for extreme athletes, but also for mere mortals in everyday life. The sapphire crystal that's used to protect most watch dials has a hardness of 2,000 Vickers and is, therefore, very scratch resistant. Steel cases, on the other hand, are more vulnerable: the hardness of 316L stainless steel, the most commonly used steel alloy, is around 220 Vickers. The case of the Panerai Luminor 1950 3 Days GMT Automatic Ceramica is made of zirconium-oxide ceramic that has a Vickers hardness of 1,200, which is significantly harder than steel, but is also more susceptible to breakage. The 44-mm case houses self-winding in-house Caliber P.9001. The sandwich-style dial with beige Super-LumiNova guarantees good legibility in the dark. Price: \$11,200.

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Pressure Suitable

ROLEX DEEPSEA

A watch's resistance to pressure really cannot be too high. While professional divers descend to a maximum depth of only 300 meters, additional pressure is generated by a diver's motion. Furthermore, high resistance to pressure makes a watch more robust. Rolex's Deepsea is a divers' watch that uses innovative technology to combine pressure resistance and a compact case. The case is 44 mm in diameter and 18 mm high, yet the watch resists pressure to a depth of 3,900 meters. The case is made of three different materials: a 5.5-mm-thick synthetic sapphire crystal; a 3.28-mm-thick back made of grade-five titanium; and an intermediate inner ring made of Biodur 108 steel, to which the crystal and the back are affixed. When subjected to pressure, these materials undergo less distortion than the steel alloys typically used for watch cases, so Rolex can build a slimmer watch. The Deepsea's movement, Rolex automatic Caliber 3135, also has the reputation of being extremely robust. Price: \$12,350.



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Beating the Heat

SINN EZM 7 S

Extreme temperatures can wreak havoc on a watch and cause it to stop running altogether. That's why Sinn uses special oil and follows narrow tolerances to build the EZM 7 S, which is specifically designed for use by firefighters. Thanks to these features, this watch is guaranteed to remain operational at temperatures ranging from -45° C (-49 degrees F) to +80° C (+176 degrees F). Every timepiece is individually tested at these extreme temperatures. The calibrated rings on the EZM 7 S's dial are printed according to firefighters' specifications and are helpful when the wearer is using a protective breathing apparatus. The 43-mm stainless-steel case is fully "tigmented" using Sinn's special surface treatment process for hardening to create a protective layer against scratches. Sinn's stay-dry technology inside the case guarantees that the sapphire crystal never fogs up. An inner case made of soft iron protects Caliber ETA 2893 from magnetic fields up to 1,000 gauss (80,000 A/m). Price: \$2,890.



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BAVARIAN BLUE

*A review of the UTS 1000M V2 divers' watch made in Germany
with a blue dial and a 42-mm stainless-steel case*

BY ROGER RUEGGER



For a watch company that usually builds dive watches with a water resistance of up to 4,000 meters, UTS's smallest dive model still comes with an impressive 42-mm version of the brand's signature case design (or 43 mm if measuring the bezel's diameter). What makes this watch a bit less extreme and, at the same time, more versatile is, on the one hand, a blue dial (called "Pacific Horizon") and, on the other, a reduced height of 14.5 mm, compared to its up-to-18.5-mm-tall sister models.

UTS (an abbreviation for Uhren Technik Spinner, or Watch Technology Spinner) was founded in 1999 by Nicolaus Spinner,

a German engineer with a passion for watches, who started the company with a manual-wind model with removable lugs, making it possible to be worn as a wristwatch or pocketwatch. The same construction with affixed lugs can be found in all of the brand's watch models, even though the hex screws probably have a more visual than functional role when it comes to the dive watches in the collection. The result, however, is a high-tech, robust look and feel that usually is best described as a "tool watch," despite the slightly more elegant blue dial.

Spinner assembles and mills all cases on his own CNC machines in Holzkirchen (a short drive away from Bavaria's

UTS 1000M V2 Dive Watch Pacific Horizon



capital city, Munich), out of a single block of German steel, and applies the brushed finish by hand. While UTS specializes in the case design and more labor-intensive construction of small series, the movements used are primarily from ETA and, therefore, less exclusive in comparison. The UTS 1000M V2 Dive Watch Pacific Horizon we reviewed is powered by the ETA 2824-2 in “top grade” (after “Chronometer,” the second-best quality available) and adjusted in five positions; the bidirectional oscillating weight features the brand’s logo. The 2824-2 was first introduced in the ’60s and is considered to be one of the best-known and most widely used mechanical movements. It is equipped with a quick-set date and a stop-seconds function to accurately set the time; the power reserve is about 38 hours when fully wound.

The watch was launched as a limited edition of 200 pieces, individually numbered on the caseback. The optional sapphire crystal on the back is impressive from an engineering point of view (given the water resistance of 1,000 meters) and, on top of that, it offers buyers the chance to see the nicely finished movement in action. A diver, or a more demanding watch collector, however, might argue that there is no functional need for an additional case opening, or no need to offer a display caseback for such a well-known movement, and opt for the solid caseback instead. The same diver might also criticize the dive-time scale on the bezel with only the first 15 minutes marked in 1-minute increments, a comparably discreet bezel pip at 12 o’clock, and could also wish for slightly more grip around the edges of the bezel, especially when operated in water and when wearing gloves. Other than that, and thanks to the multiple strap options included, the UTS 1000M V2 most certainly won’t disappoint above and below the surface.

There is an undeniable “wrist presence” to the watch thanks to the massive lugs and the bold case design, which – when worn on the 100-gram bracelet – can also be felt, thanks to a total weight of 255 grams. The slightly larger dial (hence the V2 in the name) has a two-layered look, with a galvanic blue finish over an inner sunray pattern; the date disk between 4 and 5 o’clock is black. UTS also offers a black-dial and GMT version with a different bezel.

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The watch is equipped with a solid caseback or an optional display caseback revealing an ETA 2824-2.

SPECS

UTS 1000M V2 DIVE WATCH PACIFIC HORIZON

Manufacturer: UTS München, Ing.-Büro Nicolas Spinner, P.O. Box 1429, 83604 Holzkirchen, Germany

Functions: Hours, minutes, central seconds, date display, unidirectional rotatable dive bezel (60 clicks)

Movement: ETA 2824-2, automatic, “top grade” (adjusted in five positions), 28,800 vph, 25 jewels, stop-seconds function, date quickset, Incabloc shock absorption, Glucydur balance, 38-hour power reserve; diameter = 25.6 mm, height = 4.6 mm

Case: Stainless steel, lugs and caseback mounted with hex screws, 3-mm sapphire crystal with nonreflective treatment, optional sapphire window in caseback, screwed crown, water resistant to 1,000 m

Strap and clasp: 22-mm-wide steel bracelet with folding clasp and built-in divers’ extension, blue Isofrane rubber strap with steel buckle, black rubber strap with steel buckle

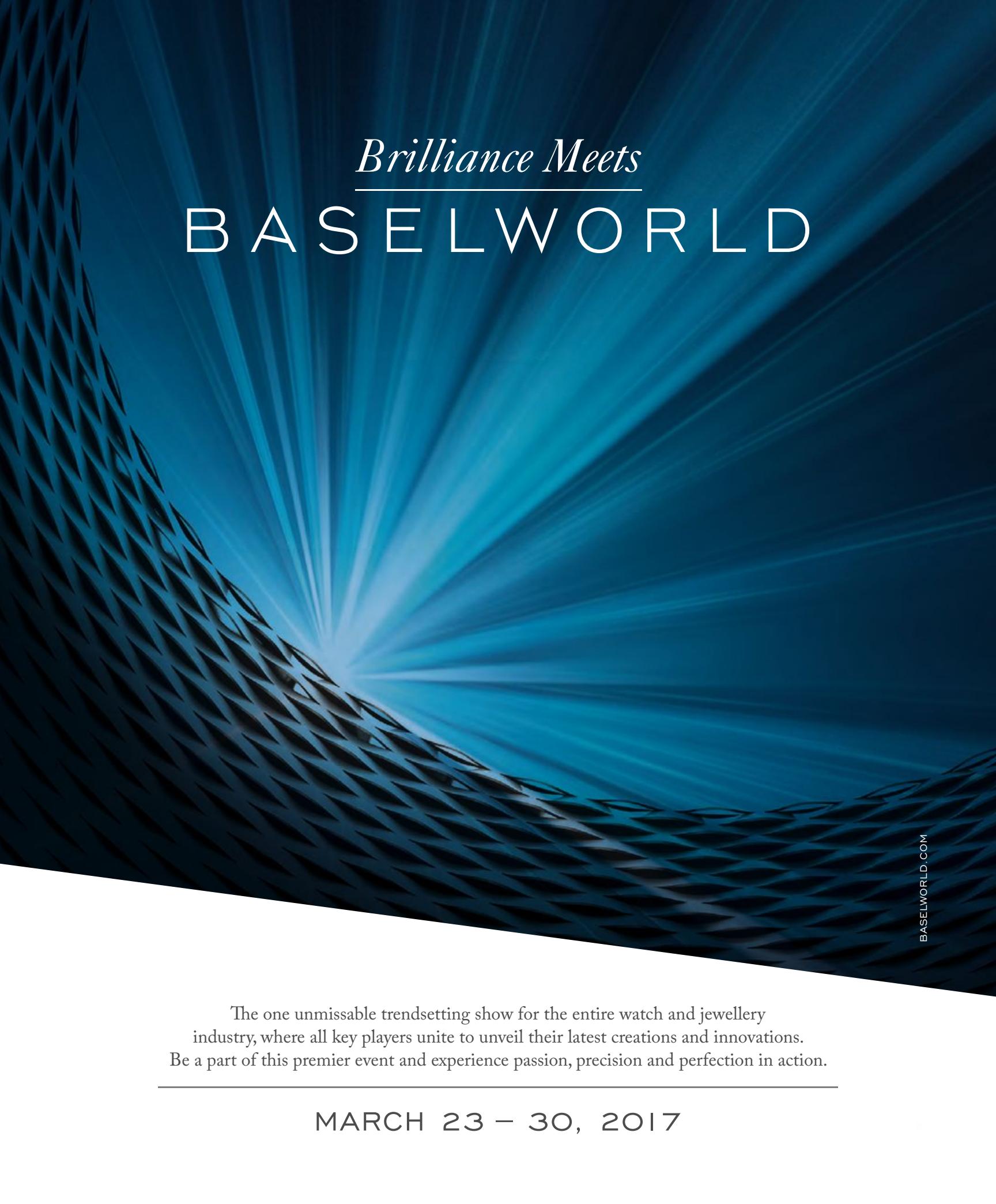
Dimensions: Diameter = 42 mm (43-mm bezel); height = 14.5 mm; weight = 155 g with rubber strap, 255 g with bracelet

Variations: Solid caseback; black dial and ETA 2893-2 GMT movement

Price: €3,000

The hands and indexes are covered with a thick layer of blue Super-LumiNova; the bezel pip glows green (which could have been either blue as well, or the minutes hand could have been covered with the same green SL to create a stronger visual link between the dive-relevant-functions bezel and the minutes hand). Readability in the dark or deep under water is excellent. The seconds hand is completely covered with luminous material, which helps check if the watch is running before and during a dive in low light conditions. The screw-in crown is 7 mm in diameter and traditionally positioned at 3 o’clock, slightly more exposed than on the 3,000- and 4,000-meter water-resistant models. Surprisingly, and even though all UTS watches are made in Germany, there is no additional text on the dial (or caseback) mentioning their origin.

We especially liked the technical, no-nonsense styling; the robust construction; and that a comparably small watch company has managed to create a collection of watches with a rather distinctive design. Even though the price might seem high, the small production number, the personal involvement of the company’s founder in the production and assembly process, and, most of all, the technical look of the UTS 1000M V2 Dive Watch Pacific Horizon represent an attractive option for anyone appreciating German engineering – in this case with a touch of blue, befitting a watch that has been built in Bavaria. ○



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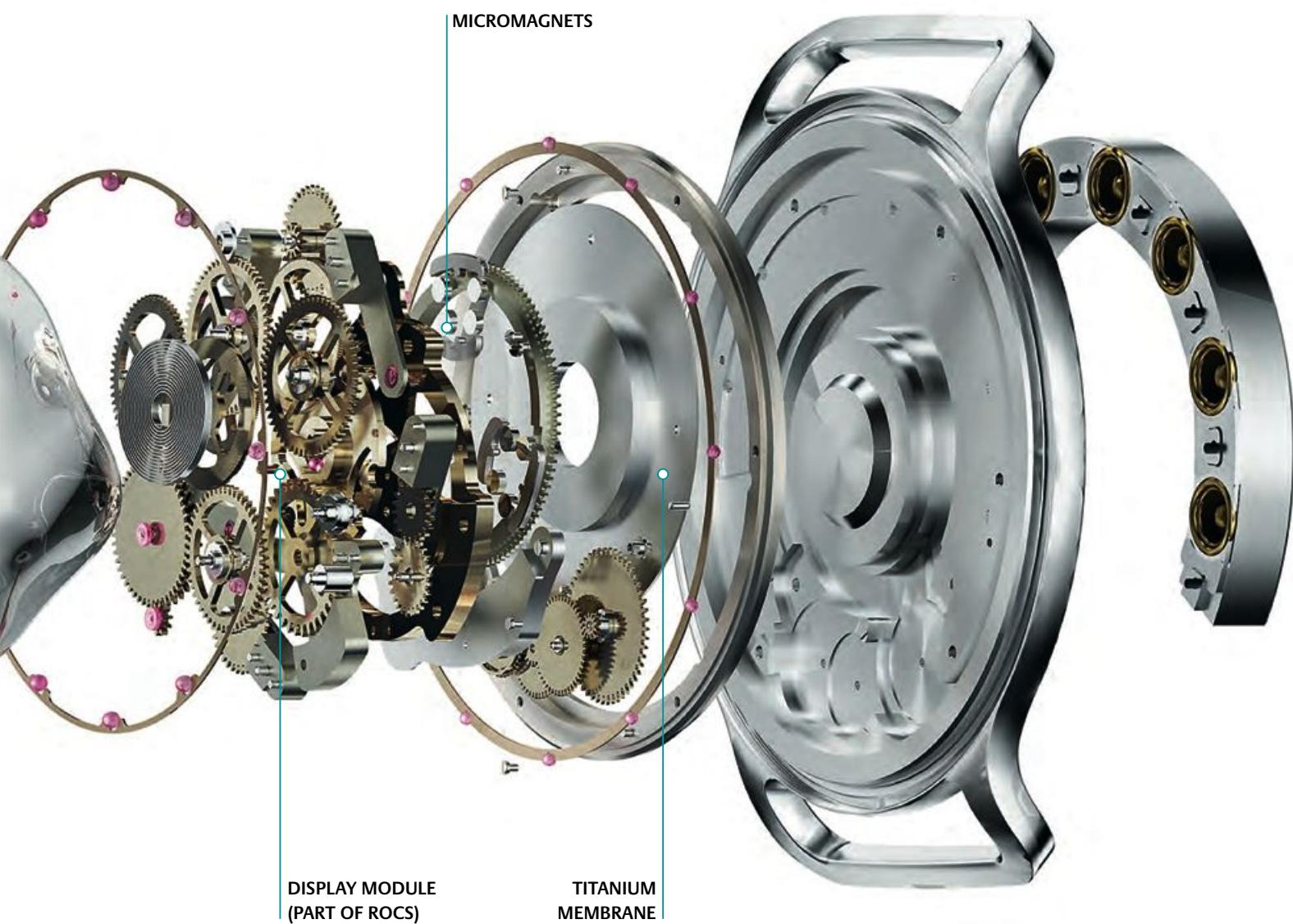
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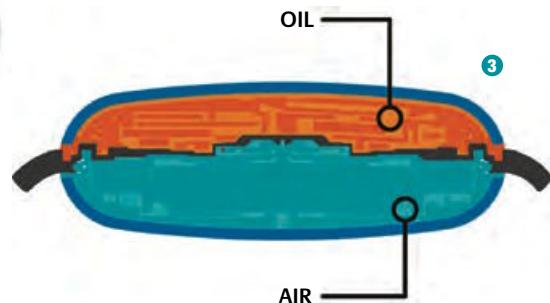
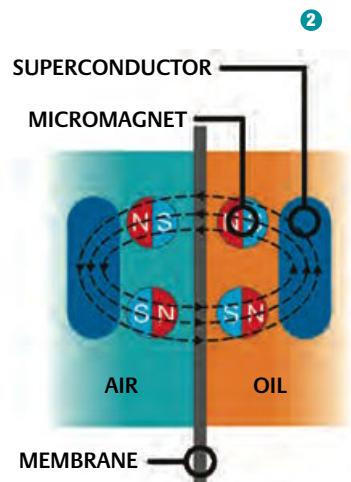
An oil-filled display system, micromagnets and a modified ETA movement create a technically demanding watch that offers a fascinating optical illusion.

BY MELISSA GÖSSLING



o f T i m e





Belgian industrial designer Benoît Mintiens founded the Ressence watch brand in Antwerp in 2010. (The name “Ressence” combines “Renaissance” and “essence.”) Mintiens makes

time a sensual experience. His Ressence Type 3 watch blurs the lines between the dial and crystal: the dial displays appear to be projected digitally on the watch’s sapphire crystal so the wearer can “touch” the time. Even the side view of the watch – from any angle – does not diminish this optical illusion. The unique features of the Ressence Type 3 only become clear after touching and operating it.

A special module – the ROCS (Ressence Orbital Convex System) – is placed beneath the dramatically curved sapphire crystal to display the time, date and day. It consists of a total of 215 parts with 28 wheels, 57 jewels and a disk system. With the exception of the geared wheels, every component is made of titanium.

The disk system is composed of a primary convex disk with four smaller disks that orbit eccentrically around the center like tiny satellites. Each disk has its own hand to show the hour, minutes, seconds and day. The date is indicated on a ring that encircles the disk system. Although the dial is constantly in motion, this in no way detracts from reading the time. First of all, our brains immediately recognize and interpret the angle between the hands: after all, this is how we learned to tell time. Determining the exact hour and minute can then follow.

THE RESSENCE TYPE 3 uses the entire surface of the crystal to highlight the displays. To create this effect, both the crystal and the black disk system are given

① Four disks in the ROCS system are placed at different angles to enhance the intuitive display of time.

② Magnets in both chambers of the case transmit information from the movement to the display module.

③ A titanium membrane separates the movement inside its air chamber from the oil-filled display system.

THE DIAL DISPLAYS APPEAR TO BE PROJECTED DIGITALLY ONTO THE WATCH’S CRYSTAL.

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The display module consists of 215 parts with 28 geared wheels.



Moving disks require intuitive reading of the time.

dramatic convex curves. The tiny satellites are placed at precisely calculated angles to the center of the dial. Ressence also sets the ROCS (the disks and module) in liquid naphtha. This oil refracts light in a way that's similar to sapphire so that the eye cannot discern the boundary between the crystal and the displays. The time appears to be projected directly onto the crystal. Only by touching the watch does this effect dissipate. The oil creates this optical effect while also providing several technical advantages.

Since the ROCS is completely submerged in oil, the weight of the individual components can be reduced and there is less friction. This, in turn, increases its accuracy. Because oil hinders the movement of the escapement, Ressence designed a three-part case for the Type 3.

THE OIL-SUSPENDED ROCS module is separated from the movement by a titanium membrane. On the other side of the membrane is the highly modified base automatic movement ETA 2824 in an air-filled chamber. The movement is driven by the minute axle. Because the movement and the ROCS are separated physically, Ressence uses micromagnets with a thickness of 0.5 mm and a diameter of 1 mm in both chambers for power transmission. The magnets are placed on the geared teeth of the base caliber and on the module beneath the disks to control the visible time displays. A Faraday cage

shields the escapement from the magnetic fields.

The special case design does not require a crown. Instead, the sapphire caseback is used to perform these functions. A gravitational system locks the settings in place when the watch is worn.

The time is displayed by a disk system that is unique to the Ressence brand. The Ressence watch is currently available in three different models. In addition to the Type 3, the Type 1 is the entry-level watch, with a display system that is not suspended in oil. The Type 5 offers water resistance of 100 meters, which makes it suitable for swimming, with the oil-suspended ROCS. Liquids cannot be compressed so the oil protects the system from water leaks. It also prevents refraction, which guarantees good legibility, even under water. ○

SPECS

RESSENCE TYPE 3B "BLACK"

Manufacturer: Ressence, Meirbrug 1, 2000 Antwerp, Belgium

Functions: Hours, minutes, seconds, date, day, temperature gauge

Movement: In-house modified base ETA 2824-2, automatic

Case: Titanium/sapphire, curved sapphire crystal with nonreflective coating on both sides, water resistant to 30 m

Strap and clasp: Leather with pronged buckle

Dimensions: Diameter = 44 mm, height = 15 mm, weight = 79 g

Variations: With various cases and dials; Type 3BB and Type 3S (\$42,200); Type 3N (limited to 50 pieces, \$43,200)

Price: \$42,200

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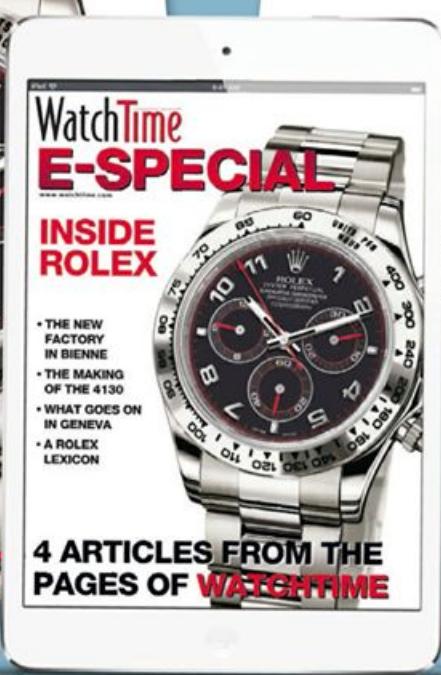


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A QUARTER-CENTURY A N D C O U N T I N G

François-Paul Journe toasts his 25 years making wristwatches with a trip down memory lane.

BY NORMA BUCHANAN

This year François-Paul Journe is celebrating a big anniversary: it was a quarter-century ago that he made his first wristwatch. In honor of the occasion, WatchTime sat down with him in his New York boutique to look back on his 25 years on watch lovers' wrists.

Journe is quick to admit that that first wristwatch, a tourbillon, was hardly a hit. It was too technically sophisticated for its time, he says. (Journe, born in France and based in Geneva, spoke to us in French; his long-time representative in the U.S., Pierre Halimi Lacharlotte, interpreted.) When he completed it, in 1991, the mechanical revival was just a few years old. Tourbillons were exotic and little understood. Only four other tourbillons were shown at Basel that year: from Blancpain, Girard-Perregaux, Gérald Genta and Daniel Roth. (Journe had already made a tourbillon pocketwatch, his first watch ever, completing it in 1983 at age 26.) The tourbillon wasn't the watch's only perplexing feature; it also had a *remontoir d'égalité*, an arcane device with roots in the 16th century,

designed to provide a steady level of power to the escapement throughout the watch's running time.

Journe completed the watch while working at the movement maker THA (Techniques Horlogères Appliquées), which he had co-founded in 1989. He showed the watch at the Basel Fair under the auspices of the then seven-year-old AHCI (Académie Horlogère des Créateurs Indépendants).

He made just three examples of his new wristwatch; two for collectors and one for himself. Günter Blümlein, then CEO of IWC, was one of the watch's few fans: he wanted to buy 125 of them to mark IWC's 125th anniversary, but ultimately even he took a pass on the watch: a series of 125 would have been too expensive.

Despite its cool reception, the watch served Journe well. He wore it year after year, and people began to take an interest in it and whatever else Journe might have up his sleeve.

The watch was more than a ticking advertisement; it was also the model for the next watch launched under the F.P. Journe name, the Tourbillon Souverain of 1999. (After Journe left THA, in 1994,



Journe's first wristwatch was a tourbillon with a remontoir d'égalité.

he set up his own workshop in Geneva, where he continued to make movements anonymously for various high-end watch brands.) Both the 1991 watch and the Tourbillon Souverain had an hour and minutes display at 3 o'clock, an up-down-type power-reserve indicator at 12 and seconds indicator at 6 o'clock. Their tourbillons were both at 9 o'clock. What came to be Journe's signature design features – the distinctively tapered hands, large Arabic numerals with serifs, and flat crown surrounded by a striated ring – were absent from the 1991 precursor and appeared for the first time on the Tourbillon Souverain.

Journe says he was motivated to start making watches under his own name because of his frustration with the big watch brands for whom he had been working at THA and in his own atelier. "I was fed up giving pearls to swine," he says with a laugh. The big brands "sucked up" interesting ideas from independent watchmakers and seldom gave them credit, he says. In the early years of AHCI's participation at the Basel Fair (it started exhibiting there in 1987), most visitors, Journe says, were not collectors or watch fans but watch brands looking for innovative ideas. The companies pretended that the ingenious new devices they cased up and sold for sky-high prices were their own inventions.

He had been making plans for his brand ever since his resignation from THA. In March of that year, while at a restaurant, he sketched on a paper tablecloth four watches that would in time join the tourbillon watch under the F.P. Journe rubric. They were a chronograph, a calendar watch, a watch with a power-reserve indicator, and what he called a "resonance" watch, later to become the Chronomètre à Résonance. This last had two balances placed side by side that were meant to keep each other in check because they were oscillating in such close proximity to each other.



The Tourbillon Souverain was modeled on Journe's first wristwatch.



The F.P. Journe headquarters/atelier in Geneva

Journe framed the tablecloth; it now hangs in the conference room of his Geneva headquarters/workshop.)

Journe made his new brand official in 1999, founding Montres Journe SA. To finance it, he borrowed an idea from Abraham-Louis Breguet. (It wasn't the first: Breguet, of course, invented Journe's debut complication, the tourbillon, and also experimented with the prin-

ciple of resonance.) That idea was to sell watches via subscription, whereby customers made a down payment on a watch, in Journe's case, 50 percent of the total price, and the watchmaker used the money to finance production of the watches. Journe made a series of 20 pieces, identical to the Tourbillon Souverain but for minor differences on the dial. All had platinum cases; they sold for 28,000 Swiss francs (nearly \$19,000 at 1999 exchange rates). Journe says the subscription watches – he called them "souscription" tourbillons, in the manner of Breguet – were the start of a policy he never abandoned: investing all the proceeds from sales back into the company.

Journe brought out the Chronomètre à Résonance in 2000. It was a tough sell at first, Journe recalls. Unlike tourbillons, with which his customers were now familiar, the resonance system was hard to grasp, and the watch didn't find a following until 2004, he says.

In the meantime, Journe was beginning to verticalize his production. He rented space in a building in 2000 – the same building he now occupies on Rue de l'Arquebuse, near Geneva's Old Town – and two years later bought it outright. Gradually the tenants left and as they did so Journe took over their space so that he could move more operations in house. In 2000 he hired several dial makers who had been laid off from Gérald Genta (that year Bulgari bought Gérald

Genta and Daniel Roth). He and two other companies, DeWitt and Harry Winston, formed a dial-making company called Les Cadraniers de Genève. Journe now owns a 51-percent share of that company; Vacheron Constantin owns 49 percent. A few years later Journe acquired a 50-percent share in the company that had been making cases for him since 1987. Journe moved the case



The Centigraphe Souverain was introduced in 2007.



The Sonnerie Souverain



The Chronomètre à Résonance, launched in 2000



The Octa Lune



The Octa Quantième Perpétuel, with instantaneous jumping date indicators

maker, now named Boîters de Genève, from Paris to Meyrin, just outside Geneva. The company also makes Journe's bracelets and clasps. Les Cadraniers de Genève and Les Boîters de Genève are housed in the same building.

In 2004, Journe began taking his first steps toward becoming a *manufacture*. Until then, the "Fecit" ("makes") in Journe's slogan, "Invenit and Fecit" ("designs and makes"), had referred to movement assembly, not the production of movement components. That began to change that year when Journe leased his first CNC machine. (When it was delivered to the workshop's basement, the designated site for all of Journe's heavy machinery, it fell through the floor. Journe had to have the floor reinforced.) There were two reasons for getting the machine. First, it was difficult to per-

suade suppliers to fill his tiny orders. (In his first years, he made 40 or fewer watches annually, and he has never made more than about 900 per year.) Second, for the purposes of prototyping, he sometimes needed parts right away. When he got the first machine, he was working on the extremely complicated Sonnerie Souverain, which was to come out in 2006. As he was developing the movement, he often had to tweak various components and needed the revamped pieces immediately. Waiting for an outside supplier to make them would have brought the process to a halt, Journe says.

He continued to buy machinery, spending a total of SF5 million on it by 2005. It was the price of horological freedom, he says. Without it, he would have been stuck in neutral. "The Sonnerie Souverain wouldn't exist, or the Centigraphe Souverain [2007], or the Octa Automatique Lune [also launched in 2007]," he says.

F.P. Journe is now a soup-to-nuts watch company, making 95 percent of its components in house. It makes some 30 models grouped into six collections: the flagship Souverain; Octa (automatic models); Linesport (titanium sports watches); jewelry watches; a collection of pieces sold only in the company's boutiques; and, almost shockingly, given Journe's fascination with mechanical

movements, women's quartz watches. (Eyebrows lifted sky-high when Journe launched the women's collection, called Elegante, in 2014. Women much prefer quartz watches, Journe explained at the time.)

He notes that today's young independent watchmakers live in a different world than he did a quarter-century ago. In some ways, it's easier. Consolidation of so many brands within huge luxury groups has led to a sameness of product, a stifling of creativity, and a loss of exclusivity, creating a vacuum that young independents can fill, he says. But the path to success is still uphill. His warning to any young watchmaker dreaming of glory: "Coming up with an idea is the easy part. Now you've got to make it work." That goes for making watches, and making watch companies. ○

WHY DID JOURNE LAUNCH HIS OWN BRAND?
'I WAS FED UP GIVING PEARLS TO SWINE,'
HE SAYS WITH A LAUGH.

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The Sound of **INNOVATION**

Panerai unveiled its most complicated watch this spring, a minute repeater capable of chiming both home and local time. But what's the Italian luxury sports-watch brand doing making minute repeaters? CEO Angelo Bonati takes us through the thought behind Panerai's sorties into the world of haute horlogerie.

BY NITIN NAIR



“



ou are crazy, Mr. Bonati. You are asking for too much.” Panerai’s long-serving CEO Angelo Bonati says this is how the team at the brand’s Laboratorio di Idee reacted when told what he expected them to deliver when they first talked about developing a chiming watch. Bonati and the team can smile now: four years on, Panerai has unveiled its most complicated haute horlogerie timepiece yet, the Radiomir 1940 Minute Repeater Carillon Tourbillon GMT.

“I told them it needed to be different from everything else out there. And it had to stick to the principles that have defined our brand DNA over the years. Did you know I rejected the tourbillon three times before they presented the current version? As far as the development of the minute repeater was concerned, I told them that I’ll be happy even if we sell three pieces. Haute horlogerie pieces are not our main business. We are looking for awareness here, a showcase of our technical know-how,” says Bonati during our chat at the brand’s spiritual home in Florence in May this year.

A select few media, under oath of secrecy, first got a glimpse of Panerai’s minute repeater during a visit to the *manufacture* in January. This isn’t Panerai’s first foray into the world of haute horlogerie, but the unveiling of an entirely new type of chiming watch, developed in house, was always going to be big news. This is an important watch for Panerai. In the 10 years that it has been a *manufacture* brand, Panerai has developed 26 in-house movements and now only 5 percent (its entry-level watches) are fitted with ETA movements. “We could go completely in house if we want to, but we prefer to keep a small percentage of watches more accessible to buyers,” says Bonati.

A minute repeater is such a departure from Panerai’s tool-watch roots that we had to ask: Why is Panerai dabbling in haute horlogerie? Is there a risk of moving away from its brand DNA? “When you are a *manufacture* brand like Panerai, you need to do things to create awareness that are linked to the *manufacture*. The only way to do this is to create products that showcase our technical know-how. We have 26 in-house movements but we needed to show our collectors that we were capable of more. Our collectors want chaos, they want something different. Of course, they are willing to buy limited editions based on existing models, but they have been asking us for something exceptional. And if they want that, we need to deliver an exceptional piece or we risk losing them,” says Bonati.

“There is clearly a clientele for our haute horlogerie pieces. To give you an example, we still get buyers requesting the L’Astronomo [editor’s note: the Luminor 1950 Equation of Time Tourbillon Titanio, limited to just 30 pieces and costing close to \$250,000]. It’s not a huge demand, but we constantly get inquiries about this watch. Our brand DNA comprises our history, our relation to the sea and Swiss watchmaking. The minute repeater is still within this realm.”

The watch is powered by the new P.2005/MR *manufacture* movement – a hand-wound skeleton caliber fitted with a minute repeater and Panerai’s patented tourbillon regulator. What sets this watch apart from any other minute repeater in the market right now is the innovative double hour and minute-repeater mechanism. The product development team zoned in on some of the characteristics of modern Panerai watches – GMT func-

WHAT SETS THIS WATCH
APART IS THE INNOVATIVE
DOUBLE HOUR AND MINUTE-
REPEATER MECHANISM.



*The hand-wound
skeleton caliber is fitted
with a minute repeater
and tourbillon.*



Panerai Minute Repeater

tion, power reserve, simplicity of design and function – and used them as reference points in the creation of the movement.

The ability of the watch to select home time or local time to chime was the most challenging bit of the design. A patented security system was built into the movement to prevent the accidental activation of the repeater function. The carillon can be operated (by the push-piece at 8 o'clock) only when the winding crown is rotated slightly. Apply pressure on the pusher to turn the crown to chime local or home time. The red HT/LT indicator at 8 o'clock shows which of the two time zones is going to be chimed.

The minute-repeater mechanism has three hammers that strike three gongs fixed to the movement and case. The choice of three hammers, instead of the traditional two, ensures that three different sounds can be combined so that the carillon can play a melody. The first gong strikes a low note and identifies the hour, the third gong strikes a high note and indicates minutes. Unlike a traditional minute repeater that marks the quarters, this is a decimal repeater. So the second gong sounds a combination of notes, each triple chime corresponding to 10 minutes instead of the traditional 15.

It's easy to forget that this timepiece is also fitted with an unusual tourbillon. Unique to Panerai, this patented design sees the tourbillon cage rotate on an axis that is perpendicular, not parallel, to that of the balance wheel. It also completes a rotation every 30 seconds as opposed to a minute. The faster rotation and unique arrangement of the tourbillon enable it to compensate for any deviations in rate effectively. Despite all its technical wizardry, the movement still has a healthy power reserve of four days (96 hours).

As far as looks go, the watch is unmistakably Panerai – the Radiomir case measures 49 mm and is actually made by soldering two pieces of 18k rose gold made with a percentage of platinum in the alloy. This construction enables more hollow areas inside the case and enhances the quality of sound, and also makes it more resistant to corrosion.

A skeletonized dial offers glimpses of the P.2005/MR movement. The hour markers are attached to the movement directly. The notations "Radiomir 1940 Panerai" and "Minute

SPECS

PANERAI RADIOMIR 1940 MINUTE REPEATER CARILLON TOURBILLON GMT

Manufacturer: Officine Panerai, Route de Pierre-à-Bot 87, CH-2000 Neuchâtel, Switzerland

Reference number: PAM 00600

Functions: Hours, minutes, small seconds, tourbillon, GMT 12/24H, power-reserve indicator on the back, local time and home time decimal minute repeater, rapid adjustment of local time

Movement: Hand-wound *manufacture* P.2005/MR, 28,800 vph, 59 jewels, Incabloc shock absorbers, power reserve of four days (96 hours), two spring barrels, 633 components

Case: Rose gold with a percentage of platinum in the alloy (also available in white gold), sapphire caseback, diameter = 49 mm

Dial: Openworked dial with hour indicators attached to the flange

Strap: Alligator leather

Price: From \$400,000

The red indicator at 8 o'clock marks the time zone to be chimed.



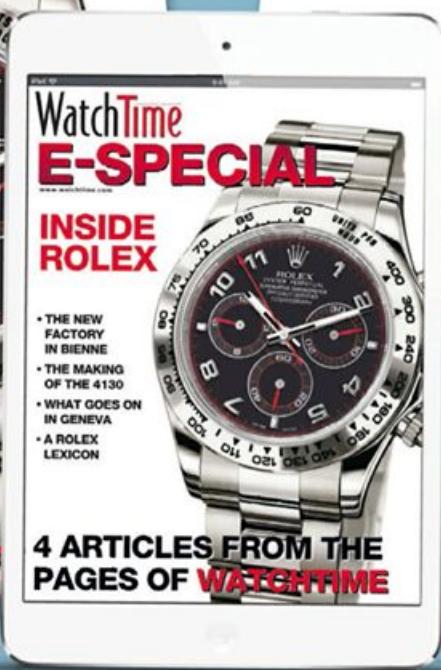
THE ABILITY TO SELECT HOME TIME OR LOCAL TIME TO CHIME WAS THE MOST CHALLENGING BIT OF THE DESIGN.

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Panerai Minute Repeater

Repeater Carillon" are engraved on the inner flange. The triple hammers and gongs are visible courtesy of a sapphire caseback. A power-reserve indicator is also placed on the caseback. Panerai offers this watch with customizable options, so you can choose between rose and white gold for the case, and also change the color of the hands and lume.

This movement has 633 components and it takes a dedicated team more than six weeks to assemble one of them. Despite the presence of a minute repeater and a tourbillon, this timepiece is water resistant up to 30 meters.

Bonati says Panerai's haute horlogerie division has been growing. "We have been hiring people for this division; it's not complete yet but we are going in this direction. For me, everything from a split-seconds chronograph right up to the minute repeater falls in the haute horlogerie category," he says.

Bonati says the initial reaction from collectors has been very encouraging and there have already been some orders. It's easy to see why – the PAM 600 has all the makings of a Grail watch for the Panerai faithful. It retains the brand's distinct identity, has a unique and sweet-sounding minute repeater, a technically brilliant tourbillon, and is water resistant up to 30 meters. Not that any sensible person would wade into the pool with a \$400,000 minute repeater but hey, you never know what some people will do for a viral Instagram post these days. ○



The carillon is operated by a push-piece and not a conventional slider.

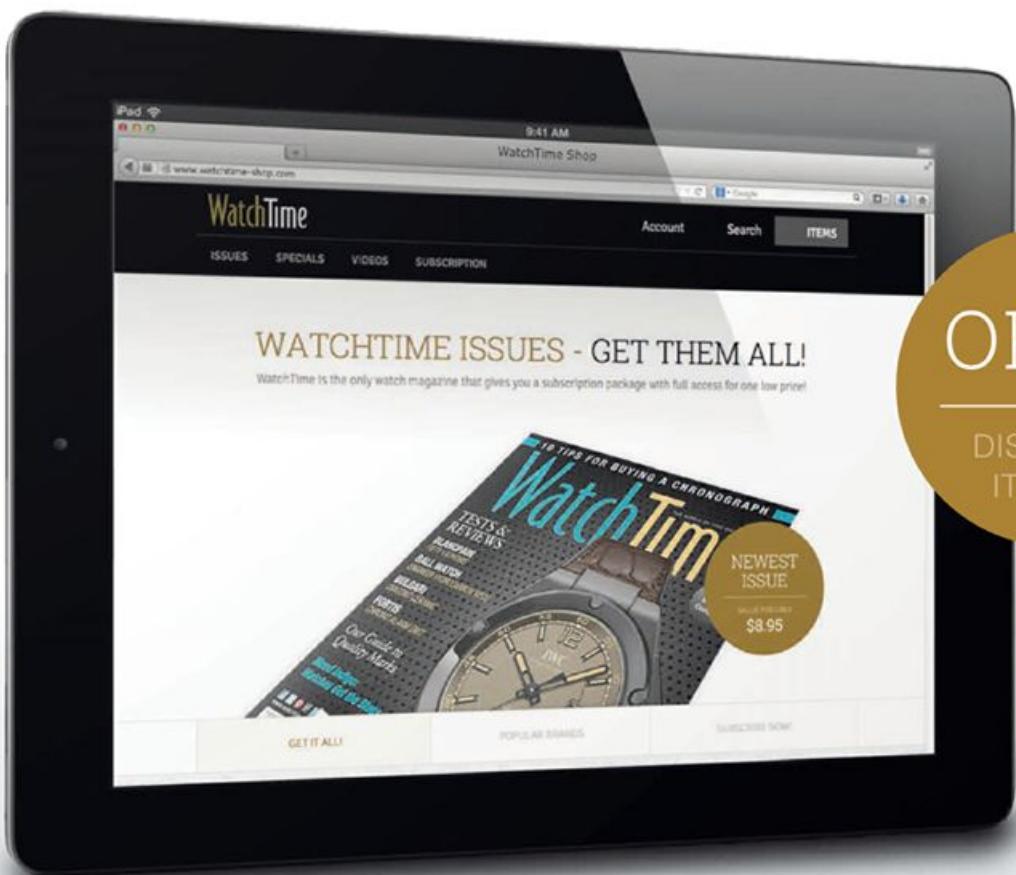
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The movement has 633 components and a power reserve of 96 hours.

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M A N

*The rise of John Reardon,
Christie's international watch chief*

O F

A U C T I O N

BY NORMA BUCHANAN



Reardon's interest in horology stemmed from a visit to the American Clock & Watch Museum in Bristol, Conn.



John Reardon was about to fly to Malawi for a post-college stint with the Peace Corps when his phone rang. It was Sotheby's senior vice president and doyenne of watches Daryn Schnipper. The auction house was recruiting personnel for its watch department, she told Reardon. Was he interested?

Reardon never made it to Malawi. In 1997, two weeks after graduating from Rhode Island's Providence College, he started his new job working for Schnipper at Sotheby's U.S. headquarters on New York's Upper East Side. Now, at age 42, Reardon is the international head of the watch department at Christie's, the world's biggest watch-auction house. How did he get what is, one might argue, the most important job in the vintage-watch world? What is that job like? We met with Reardon to find out.

His choice of career was due, in large part, to a happy accident: he was born and raised in Bristol, Conn., the heart of what

is in effect clock country. Bristol and many nearby towns were home to a small army of 19th- and 20th-century clock companies: Waterbury Clock Co., Seth Thomas, E. Ingraham, Sessions and many others.

Bristol is also the home of the American Clock & Watch Museum. Reardon visited the museum for the first time as a teenager and met its venerable curator, Dana Blackwell. Reardon was smitten by the museum's thousands of American-made timepieces and, under the tutelage of Blackwell and his successor, Stuart Mitchell, learned clockmaking. Throughout high school he did volunteer work for the museum. "Then I very quickly found out I could clean clocks and actually make money," he says. He set up a workshop in the basement of his family's house. Into it flowed a steady stream of 19th-century, Connecticut-made clocks, more than Reardon could handle. He spent as much time as possible at the bench, continuing the work all through college. He also worked for the Willard House and Clock Museum, in North Grafton, Mass., and, in a very different vein, the Providence-based Speidel, where, as an intern, he helped design watch straps.

Reardon was having a blast with his creaky old clocks, but they were just a hobby. He wanted to make a difference in the world. As he approached graduation, he signed up for the Peace Corps. But the call from Schnipper, who had heard about Reardon's horological bent from his mentor Blackwell, was a siren's song.

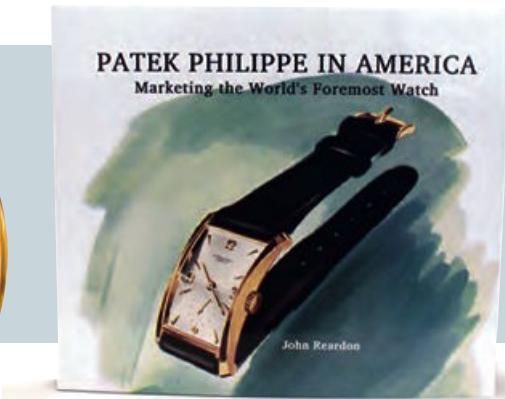
Reardon's job at Sotheby's included cataloging timepieces that would go up for auction: researching their technical features and provenance, determining their condition and estimating their prices. "I look back at it very fondly; as a cataloger

In his early days at Sotheby's, Reardon cataloged the most famous Patek Philippe ever, the Graves Supercomplication.



PATEK PHILIPPE IN AMERICA

Marketing the World's Foremost Watch



Reardon collects Patek Philippe print ads, which provided the basis for his 2008 book about the brand's history in the U.S.

you're alone with the piece, working sometimes into the wee hours of the morning," he recalls. In the 1990s, far less information was available online than can be found today, and researchers relied on books and, even more importantly, on watch experts. What you knew depended a lot on whom you knew, Reardon says. "You had to find the most knowledgeable people in the world to assist you. There weren't schools to go to, so you had to find your own expertise." Over the years, Reardon nurtured relationships with a network of watch savants such as the prominent collector Winthrop Kellogg Edey (he left 21 clocks and watches to the Frick Collection in New York when he died in 1999). "I went to see him once a week; I would show him timepieces and we would talk about them."

The first catalog he worked on featured Rolex ephemera such as vintage store displays. His ephemera phase was, well, ephemeral. Reardon soon began cataloging watches by Patek Philippe, including the most famous Patek Philippe of all time, the Henry Graves Supercomplication, which would bring \$11 million when it went on the block in December 1999. It was the most expensive timepiece ever sold at auction. (In November 2014, Sotheby's auctioned it off again, this time for \$24 million.)

Patek Philippe became his passion. "It was really at this point that it embraced me and to this day Patek Philippe is everything for me," he says. He likes the brand not just for its technical prowess and its fine workmanship, but for its history of tribulation, which began with Antoine Norbert de Patek's battle to establish the company in the mid-19th century. (De Patek's trials included one particularly vexing trip to the U.S., where his watches were almost stolen and he was stranded

for days on a boat that ran aground.) He is intrigued by the fact that, until 1989, when Patek unveiled its famous Caliber 89 and auctioned it off for 4.95 million Swiss francs at a sale marking the company's sesquicentennial, the brand was widely underappreciated. "After 1989, it's a different story line. Up until then, it was a constant struggle," he says. Lastly, he likes the way Patek's watches look, both outside and inside. "The beauty and the aesthetic really resonates with me," he says. (Of the six wristwatches he owns – he has many American pocketwatches – four are Patek Phillips. During the interview he wears his favorite, a yellow-gold Reference 2525 from 1951.)

Such was his admiration for the brand that, in 2001, when Patek Philippe called him to ask if he were interested in working there, he at first thought it was a prank by someone aware of his obsession. "It was like a dream come true. I basically said, 'Sign me up.'" (As it turned out, getting the job wasn't that simple. He faced four months of interviews before he landed it.) His job at Patek was to meet with retailers all over the U.S. to balance their stocks and train their personnel on how to present Patek Philippe watches to their best advantage.

Reardon liked the job but there was one problem: he missed the world of vintage watches. To scratch his vintage-watch itch, he started to write, in his spare time, a book called *Patek Philippe in America: Marketing the World's Foremost Watch*. It tells the story of the brand in this country, beginning with de Patek's travels here and ending in the late 1980s. It does so primarily through the use of Patek Philippe advertisements, which Reardon has been buying on ebay since the 1990s. (The subtitle *The World's Foremost Watch* was an advertising tagline the company used in the 1950s.)

"I started obsessively collecting every print Patek Philippe ad that came up, not just in the U.S. but from all around the world. Now I have a collection of more than 1,000 ads," he says. They are a treasure trove of information. "They're the best primary source for learning about watches because the ads show pieces that are unpolished and untouched. They show the historical context in which the watches were presented, with original prices in many instances, how the watches were sold and in many cases where they were sold." As a Patek employee, Reardon had access to its historical records. (He made the most of it. The book contains such background color as a 1930s map of the U.S. showing the zigzag route one of the company's salesmen followed while calling on retailers.) He also got a huge assist from former U.S. CEO Werner Sonn, who began working for the company in 1939 and hence had unrivaled knowledge of its doings in this market. Sonn put Reardon in touch with people all over the world who gave him useful information about the brand's history.

But the book didn't quite quench his thirst for vintage, so after nearly a decade at Patek he returned to that world: not at an auction house but at the Betteridge jewelry store in Greenwich, Conn. His job was director of vintage and estate watches. He stayed there a year.

It was one of the hardest of his life, he says. Reardon loved fine timepieces and was in awe of the painstaking craftsmanship required to make them. He was fascinated by provenance and by history. All that was shoved into the background when he entered the nitty-gritty world of retail. "They don't mean much when you're trying to sell a watch," he says. "A lot of the romance of watches was put aside for me. It was about the reality of the business."

To find watches to sell, he traveled to shows around the country organized by the International Watch and Jewelry Guild. "They're the Wild West of timepieces," Reardon says of



Christie's U.S.
headquarters at
Rockefeller Center

**REARDON JOINED CHRISTIE'S IN 2013
AS HEAD OF WATCHES IN NEW YORK.
WHAT FOLLOWED, HE SAYS, WAS A THREE-
YEAR-LONG "ROLLER COASTER RIDE."**

the shows. Thousands of vintage watches are laid out on exhibitors' tables, which are arranged row after row in a giant open room. "It's the unregulated commodity trading floor of the industry. There is zero romance. Nothing matters except the dollars and the watches and the only thing that separates you from the rest is knowledge," he says. "It was the school of hard knocks to work the show circuit. There's nothing glamorous about it."

For all that, he's glad he got to see the vintage-watch scene from another vantage point. "It was fascinating to see how this part of the industry works, ... where supply and demand are everything." And cruising the aisles at the IWJG shows did yield some gratifying surprises. "You still have the moment when you find some extraordinary piece, or when you find a watch you've been looking for, or learn something you've never known before. That's why we all do this." The "adrenaline-powered treasure hunt," as he calls it, is what it's all about.

international head of watches. (Unlike Bacs and Russo, who are outside consultants, Hines is employed directly by Phillips.)

After Hines left, Reardon found himself alone in the top job. "At that point, I inherited something I didn't expect, the helm of the world's number one auction house," he says.

As helmsman, he manages a staff of 20 watch specialists in New York, Hong Kong, Geneva and Dubai and oversees Christie's eight annual live watch auctions and its online auctions (there were also eight of these this year). Reardon is an enthusiastic proponent of online auctions, which vastly broaden the number of potential buyers. And because there are no space limitations in online catalogs, as there are in print ones, the auction house can present more information and photos. This increases buyers' confidence, Reardon believes. "We're starting to see with our digital sales, prices that are higher than what we see with our [print] catalog," he says. "In our sale starting next week [mid-September], we have five pieces esti-

IN 2011, SOTHEBY'S asked him to return, as the head of its watch department in the U.S. He stayed for nearly two years. His knowledge of the watch industry was much broader than it had been when he left, he says, thanks to his time at Patek Philippe and at Betteridge. "With that knowledge and those relationships, I was able to have a very successful time, my second time at Sotheby's."

Rival Christie's took note: it hired him in 2013 as head of its watch department in New York. The following three years were a roller coaster ride, Reardon says. First came the resignation of his boss, Aurel Bacs, international head of watches. Bacs is a star in the watch-auction world: it was under him that Christie's had become the world leader in watch sales. Its watch sales rose from \$8 million to \$126 million in the decade Bacs was there. His departure to form a consulting company, Bacs & Russo, with his wife, Livia Russo, also a watch specialist at Christie's, rocked the watch-auction world. (Bacs and Russo have an agreement with the Phillips auction house to work for its newly re-established watch department.)

Then, in late 2013, in the wake of Bacs's departure, came Christie's appointment of Reardon and Sam Hines, the auction house's watch chief in Hong Kong, as international co-heads for the watch department. In 2015, Hines moved to Phillips, as



Dial and movement of Patek Philippe's Ethan Allen grand complication, to be auctioned in December

mated at well over \$100,000. The future will be completely digital."

Lastly, Reardon is in charge of private sales, of which there are two types. In one, a customer contacts Christie's requesting a particular watch, and Reardon or another watch specialist finds it for him. In the other, handled through Christie's Watch Shop, Christie's posts watches for sale with fixed prices. Private sales are the fastest growing category of sales for the watch department, Reardon says. (He won't divulge Christie's watch department sales or the respective portions provided by live auctions, online auctions and private sales.)

HIS FAVORITE PART of the job is still the hunt, especially for what he calls "hero" lots around which he can build a sale. (Reardon isn't an auctioneer; he leaves that to Thomas Perazzi, Christie's head of watches in Geneva.) Each morning he clicks through the fresh crop of e-mails that has sprouted up in his inbox since the day before. "You see things worth a few hundred dollars, and then you come to something worth half a million dollars. That's when we jump on a plane and go to see the person to discuss it." He also does estate appraisals, picking through the contents of safe deposit boxes. Sometimes the boxes

yield amazing surprises: extremely valuable watches, in mint condition, that he didn't even know existed. "After we do our research and see the archives we find out that yes, it's the real deal. These discoveries make everyone in the office cheer."

Thanks to his stint at Patek Philippe, he has a wish list of Patek pieces he would love to get his hands on. "I had the opportunity to see a lot of great pieces, ones that had been handed down from generation to generation. Many of these pieces will not come to market. But just knowing they exist, really unique references with really unique retail signatures, in unbelievable condition ... it's fun knowing they're out there," he says. "And sometimes conditions change. Prices can reach a level that makes it easier to part with Grandpa's watch."

Once in a while a hero lot walks right through his door. "I love it when people come in and say, 'I have my great-grandfather's watch. It has all these buttons on it. We don't know what it does.' And your eyes light up."

One fantastically valuable watch that just "walked in the door," so to speak (actually, the consignor phoned about it) was last December's Pearl of Bahrain, a Patek Philippe time-only Reference 2573 wristwatch made in 1958. The watch gets its name from the tiny natural seed pearls that serve as hour mark-



"I LOVE IT WHEN PEOPLE COME IN AND SAY, 'I HAVE MY GREAT-GRANDFATHER'S WATCH. IT HAS ALL THESE BUTTONS ON IT. WE DON'T KNOW WHAT IT DOES.'"

ers, believed to have been harvested off the coast of Bahrain. It was a gift from a Bahraini emir to an American businessman. Neither its consignor nor Christie's had expected much of it: the watch had a presale estimate of \$10,000 to \$15,000. It brought \$437,000 following a scene of manic bidding in which the sale-room's phone banks were busier than Reardon had ever seen them. "It could have been an Impressionist or contemporary art sale," he says. The fact that the watch was fresh to market, very rare (Christie's research suggests it is the only extant Patek Philippe with the original pearls), in mint condition and a symbol of a friendship between a Middle Eastern royal and an American, captured bidders' imaginations, Reardon says.

The real heart-stopping finds are watches with unusual, or, better yet, one-of-a-kind features linked to interesting provenance and technical distinction. One such watch is a 1903-'04 Patek Philippe pocketwatch that Christie's will auction off this December. It's a grand complication, with split-seconds chronograph, minute repeater and perpetual calendar. The watch was commissioned by a Louisiana woman

Surprise star: the Pearl of Bahrain sold for \$437,000 in December 2015. Its estimate was \$10,000 to \$15,000.



named Carrie Belle Carter as a gift for her husband, a homeopath named Ethan George Allen. Allen had gotten rich selling herbal medicines. That's the key to the watch's most obviously unorthodox feature: seven of the watch's hour markers are designed with a botanical motif, with plant roots spelling out "Allen" and forming the initials "C.B.C." The watch's movement is inscribed with the names of both Carrie Belle Carter and Patek Philippe. Reardon had for years heard rumors of the watch's existence; they were confirmed when he saw it for himself (he won't say where). He has put a pre-sale estimate on the watch of \$400,000 to \$800,000. ○

Story Time

Reardon is a history buff and lover of watch stories. No wonder he thinks a collector's watches should tell a tale. He champions what he calls a "vertical" approach to collecting, in which the collector buys watches around a particular theme with the intent of painting as complete a picture of it as possible. Do it right, and you will have what amounts to a "wearable museum," he says.

If your theme is, for instance, Patek Philippe perpetual calendar chronographs, you would start with Reference 1518. "Then you go to the 2499 and through the various series and then you get all the way to the modern production equivalent. This enables a collector to tell the history in a way they would not be able to do if they just collected 1518s. It's a way to show the evolution of the design and the technical evolution from caliber to caliber. And it allows collectors to have pieces they can wear along with the pieces they leave locked away."

The important part, he says, is knowing where you're going and creating a road map to get there. Don't rush, he says. "Part of it is being patient and being ready to pounce when you find the right watch. I think I spend more time telling collectors not to buy watches than to buy them," he says.

Whatever you do, he says, don't collect as an investment. "This is not a good idea," Reardon says. When a potential collector tells him he wants to collect watches to make money, he tells them, "Get a mutual fund instead." His warning to them: any novice who thinks he can game the vintage-watch market is bound to lose.

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WatchTime

THE WORLD OF FINE WATCHES

Christopher Ward: A BRAND IS GROWING UP

For more than a decade, the English newcomer brand has offered its watches exclusively via direct online sales. But following its merger with Synergies Horlogères of Bienne in 2014, Christopher Ward embarked on new paths, including its own in-house movement and modules.

BY ROGER RUEGGER



The Christopher Ward brand was launched by Mike France, Peter Ellis and its namesake Chris Ward in England in 2004. The first model was the classical three-handed C5 Malvern Automatic, which debuted one year after the brand's founding and was based on an ETA 2824-2. Right from the start, the troika of co-founders decided to sell their watches only directly to online retail consumers and without a traditional distribution network. This approach made it possible to charge correspondingly low prices for the watches offered. Then as now, Christopher Ward's pricing policy relies on a simple rule of thumb: the sum of the prices of all individual components is multiplied by three, thus assuring that the company can operate profitably. Mike France explains, "We have an efficient and vertical business model that allows us to earn a fair profit on markups several times smaller than our mainstream competitors."

Opting to make do without its own production capacities means that Christopher Ward has to source its components

from external suppliers and has its Swiss-made watches manufactured by third parties. Considering the company's relatively small size and its location outside London, this is far from surprising.

A central role is played by Bienna-based Synergies Horlogères SA, which has served as general contractor specializing in the fabrication and sale of watches and watch components since 2006. This company has been active on behalf of Christopher Ward and other customers for the past eight years. Synergies Horlogères employs a staff of around 15 and

is directed by Jörg Bader, who previously helped the Fossil Group expand its portfolio of Swiss-made watches. With assistance from another company in the Italian-speaking part of Switzerland, all of Christopher Ward's watch models are assembled in Switzerland and delivered from there. The team in Bienna primarily concentrates on the somewhat more complicated mechanical models. Synergies Horlogères is also currently training watchmakers from England so that in the future, standard repairs and inspections can be performed directly at Christopher Ward's main office in England.



The C9 Worldtimer encases a standard caliber, but the selected module is Synergies Horlogères's own development: it visually indicates the user's location.

NOW LET'S SHIFT our attention from England to Switzerland, known as another "island" in the midst of Europe. As a provider of a full range of services for various watch brands, Synergies Horlogères was among the companies that were forced at an early date to find an answer to a thorny question. After the Swiss Competition Commission COMCO handed down the expected ruling,



All watches are assembled in Switzerland and shipped directly from there.



Chris Ward, for whom the English brand is named, is also one of its three co-founders.



In-house Caliber SH21 celebrated its debut in the collection in 2014 inside the case of the C9 Harrison 5-Day Automatic, and it did so at a price slightly under \$2,000.



which permitted the Swatch Group to drastically reduce sales of mechanical watch movements and assortments to third parties, how could Synergies Horlogères acquire an adequate supply of mechanical movements without continuing to rely on the Swatch Group? Sellita was the logical source to assure long-term coverage of the requirement for basic movements. Accordingly, the mechanical three-handed watches primarily feature the SW 200-1 and ETA 2824-2. Depending on the specific model (e.g., Moonphase and Worldtimer), these calibers are then equipped with Synergies Horlogères's own modules.

More important, Synergies Horlogères decided approximately five years ago to not only produce modules, but

The atelier in Bienna is among the locations where Christopher Ward's watches are manufactured, but smaller repairs will be performed increasingly more often in England in the future. (In the picture: Johannes Jahnke.)



The debut of the C65 coincided with the premiere of a new logo at 9 o'clock. This model retails from \$690 and is based on Sellita's Caliber SW 200-1.

also to begin developing a base caliber of its own. German watchmaker Johannes Jahnke, who has since been promoted to technical director at Synergies Horlogères, was entrusted with the task of designing the caliber. Jahnke previously worked for Lang & Heyne in Dresden, where he completed his training by unveiling a much-praised single-button chronograph with column wheel. Knowing this makes it also easier to understand why Christopher Ward added a hand-wound Mono-Pusher Chronograph, the C900, to its portfolio in 2012.

Jahnke named his brainchild "Caliber SH21." This designation combines the first two letters of the words "Synergies" and "Horlogères," followed by the numeral "21," which refers to the fact that this movement is already Jahnke's 21st project. Jahnke opted for a comparatively large diameter of 32.7 mm, which makes this movement 7.1 mm larger than Caliber 2824 and 2.7 mm bigger than the ETA 7750 chronograph movement, which set the benchmark for the neophyte's robustness and reliability. Caliber SH21 has a height of at least 5.4 mm because the base plate was conceived to support a maximum number of different constellations and to preempt any problems that might arise when this caliber is industrially manufactured in large numbers. Caliber SH21 can therefore

be ordered as a hand-wound version with 27 bearing jewels (see "One Hand, Two Barrels" in the December 2015 issue of WatchTime) or as a self-winding variation with 31 bearing jewels among its 164 components. Thanks to the building-block principle, other modifications and/or horological complications aren't only possible, but were already planned right from the start.

Caliber SH21 premiered for slightly more than \$2,000 inside the C9 Harrison 5-Day Automatic in 2014, which was another elegant self-winding three-handed watch, and in its first variation, the C9 5 Day Small Second, which – as its name states – indicates the seconds on a small subdial rather than via a central sweep seconds hand. The SH21 was also

The SH21 offers a five-day power reserve and provides ample space for additional complications. COSC certifies each movement as a chronometer. English brand, Swiss construction: this is also evident in the engraving on the movement's bridges.

deployed in the brand's best-selling series of watches, the C60 Trident divers' watch with ceramic bezel. This model is available with a variety of movements, color schemes and case sizes.

Thanks to its two barrels, the SH21 offers a five-day (120-hour) power reserve. The balance oscillates at a frequency of 4 Hz, which corresponds to 28,000 vph.

To sum things up, the SH21 can justifiably be described as an in-house development. Fabrication of the necessary individual parts is entrusted to nine additional Swiss suppliers, one of which is Concepto in La Chaux-de-Fonds. COSC is charged with certifying each movement as a chronometer. Alongside assembly and quality control, Synergies Horlogères is also responsible for setting the jewels into the base plate. Constructive interventions and modifications, if necessary, can be undertaken on the company's own premises as well.

This caliber's second series is currently in production, which raises the total number of produced movements to 7,000 units. This large figure can serve as an indication of how well the construction has proven itself in the practical



aspects during the past 24 months of industrial production.

As expected, Christopher Ward is likely to increase the percentage of its own movements and modules in the coming months. This, in turn, will make the brand's product range even more attractive for collectors. Although co-founder Mike France still views his brand as an insider's tip, the label is already manufacturing more than 20,000 watches per year and the name "Christopher Ward" can most likely already be found among the top 20 brands in COSC's statistics.

With an eye on growth, this English-Swiss cooperation with German know-how has undergone further structural strengthening. Christopher Ward and Synergies Horlogères had become such close partners that the two companies merged in July 2014.

ONE YEAR AFTER the merger and the mechanical emancipation achieved with Caliber SH21, the starting shot was fired to give a stronger and more distinctive visual profile to the brand's watches. Simultaneously with the announcement of the hiring of Swiss watch designer Adrian Buchmann to work at the company's headquarters in England, Christopher Ward instituted the brand's biggest visual change to date. Beginning in spring of 2016 with the C65 three-handed watch, Christopher Ward abandoned its former logo ("Chr. Ward") and unveiled its new logo, which now fully spells out the name "Christopher." The large "C" was replaced by a typographical solution, and the initial appearances on the dials already show significantly more distinguishing features, one of which is the positioning of the brand's name at 9 o'clock.

This logically goes hand in hand with a stronger profile for the brand's watches,

The C900 Mono-Pusher Chronograph is based on ETA's Caliber 6497 and is available starting at \$3,190.

which, on the other hand, will most likely lead to a somewhat slower, or more traditional release cycle of new models. Christopher Ward will continue to rely exclusively on direct online sales, but the percentage of components that must first be designed and/or engineered exclusively and produced will increase, which will necessarily lengthen the development time. To counterbalance this, Mike France says that consumers can look forward to encountering Christopher Ward's watches in unconventional places, where the brand hopes to attract new customers. With typically British understatement, he adds, "We may not often follow the path of least resistance by challenging the traditional model of the watch industry, but it makes for an interesting journey!" ○



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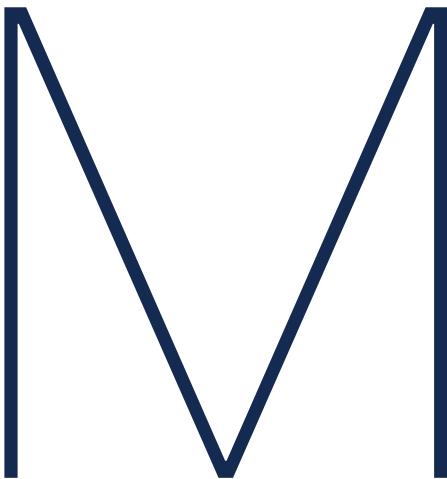
THE WORLD OF FINE WATCHES



THE PERFECT FACE

Patek Philippe employs artisans who have mastered every specialty in the art of watchmaking, including dial making at the brand's subsidiary, Cadrans Flückiger in Saint-Imier.

BY ALEXANDER KRUPP



Extraordinary manual dexterity is essential for mounting the indexes and the other appliqués.



aking dials for luxury watches is a delicate and complex art. Even the smallest error will be plainly visible on a finished watch. That's why Patek Philippe has its dials produced by Cadrans Flückiger SA.

The Cadrans Flückiger dial factory, which was established in 1860, was taken over by Patek Philippe in 2004. With this acquisition, the Geneva-based *manufacture* took the final step toward independence from external suppliers. Cadrans Flückiger relocated to its present quarters in the commercial district of Saint-Imier, in Switzerland's Jura region, in 2006. The

modern, newly built factory provides 2,000 additional square meters of area for new departments and staff, currently about 100 workers. Moreover, the new premises enable Cadrans Flückiger to uphold the strictest environmental standards. The venue offers optimum conditions for the annual production of 100,000 dials, which are produced in batches ranging from 100 to 500 pieces, as well as in small series of one to five. Forty percent of the dials are destined for Patek Philippe. As was the policy prior to the takeover, the remaining 60

percent are delivered to other luxury-watch manufacturers.

Between 50 and 110 steps are needed to fabricate a dial for a Patek Philippe watch. The face for a luxury watch begins with the creation of a prototype. Six colleagues collaborate in the prototype division, where they conduct feasibility studies, draft technical drawings, determine the exact specifications for the design and produce patterns. The team in this department is also responsible for fabricating small series and for after-sales service. Serial production begins with the stamping of the blanks. Co-workers first mechanically stamp the eyes for the hands' staffs and the apertures for windows, if any, from square brass plates. If necessary, presses bevel the edges of the windows. Only in the final step does the dial receive its (usually circular) contour. The subsequent steps are mechanical drilling, milling, deburring, circular graining and diamond polishing.

Next comes the surface processing. Dials may be matte finished, brushed to a satin finish, sandblasted or adorned with a sunburst pattern. Pressurized jets, abrasive disks or handheld brushes can be used, depending on the desired finish. Afterwards, the parts that will ultimately become the watches' dials are immersed

Many steps in the process of fabricating dials are performed by hand.





Lettering is pad printed onto the dial.

BETWEEN 50 AND 110 STEPS
ARE NEEDED TO FABRICATE
A PATEK PHILIPPE DIAL.

in an electroplating bath, where they acquire a coating of nickel, rhodium, ruthenium, silver or gold. The layer that precipitates onto the metal substrate in the course of this electrolytic process is between 0.00001 mm and 0.015 mm in thickness. The latter value is 1,500 times thicker than the former, but is nonetheless four times thinner than an average strand of human hair. Multiple immersions in a chemical bath give the dials their final color. The spectrum of hues is theoretically unlimited, but Patek Philippe usually opts for understated tones such as silver, gold, brown, gray, blue or black.

In addition to these techniques, the artisans at Cadans Flückiger have also mastered diverse specialties that make the dials of the haute horlogerie timepieces into miniature works of art. Guilloché embellishment, for example, is applied with the aid of antique machines that rely entirely on mechanical means to transform complex decorative designs on large-format templates into tiny engraved patterns on the watches' dials. Enameling demands absolute mastery of the materials and several kiln firings, each of which could potentially destroy the component. And gemstone setters must work with the utmost care to ensure, for example, that each diamond is firmly mounted and can best reveal its sparkle.

An artisan who practices any of these techniques must scrupulously avoid even the slightest inaccuracy. Anything less would betray the trust that Patek Philippe's clients place in the high art of watchmaking.

Patek Philippe also fabricates appliqués at the same site. This assures that the indexes for the hours and minutes, as well as the frames that surround win-



Guilloché patterns are crafted with the aid of antique machines.

dows in dials, perfectly harmonize with the base layer. The production of appliqués also involves cutting the proper shapes for indexes, stamping and pressing the anchoring feet, and faceting the indexes. Patek Philippe, as well as other luxury brands, insist that the faceting must be manually executed. In the assembly phase, skilled artisans insert the appliqués into the appropriate borings and anchor the appliqués by riveting or soldering on the underside of the dial.

A meticulous final quality control is the last step in a long series of examinations that guarantee that each watch's dial is immaculately fabricated. ○



Patek Philippe world-time chronograph with guilloché-embellished dial

PATEK PHILIPPE
GENEVE

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*Cloisonné enamel dial on
a world-time watch from
Patek Philippe's 175th
anniversary collection.*



SHINE
ON



*Not all that glitters is (solid) gold.
Electroplating and PVD technologies
are commonly used to coat or plate
watch cases, bracelets and movement
components to enhance aesthetics
or function.*

BY MELISSA GÖSSLING



Watch parts are submerged in several electroplating solutions for specified time periods.



Gold is an expensive precious metal that has often been used to beautify less valuable materials. In addition to making an object more aesthetically pleasing, coating an object with gold can be functional as well. Since gold is one of the more corrosion-resistant precious metals, industrial tools may be given an outer layer of a gold alloy to protect against wear or to improve electrical conductivity. Gold plating makes watch components more attractive and gives added protection to movement parts, cases and bracelets.

Electroplating technologies are frequently used for gold plating a variety of watch components. Metals in salt form can be applied to different materials in chemical bath solutions.

Almost any metal or non-metal object can undergo this treatment. Depending on the combination of materials, pretreatment may be required to ensure that the metal will adhere to the substrate. The electroplating process begins by thoroughly cleaning the components using ultrasonic cleaning, scouring and electrolytic degreasing. The parts are then rinsed, followed by "activation" with acids and then neutralization to provide an adhesive base layer. Electroplating can then take place in several bath stages.

In the electroplating process, a metal bond is created in a salt or acid bath, in which metal cations (positively charged ions) are present in an electrolytic solution. An anode and a cathode provide the plus and minus poles for this electrochemical process. The object itself functions as the minus pole or cathode. Once current is introduced, positively charged metal ions are repelled by the positive anode and adhere to the electrically charged object, which becomes coated evenly with a thin layer (usually 0.001 to 0.05mm thick).

Six to seven repetitions may be necessary depending on the desired hardness and thickness, followed by fine ultrasonic





Watch parts already shine brightly after the initial electroplating bath.



Lehmann Schramberg provides movement bridges with a special electroplated finish.

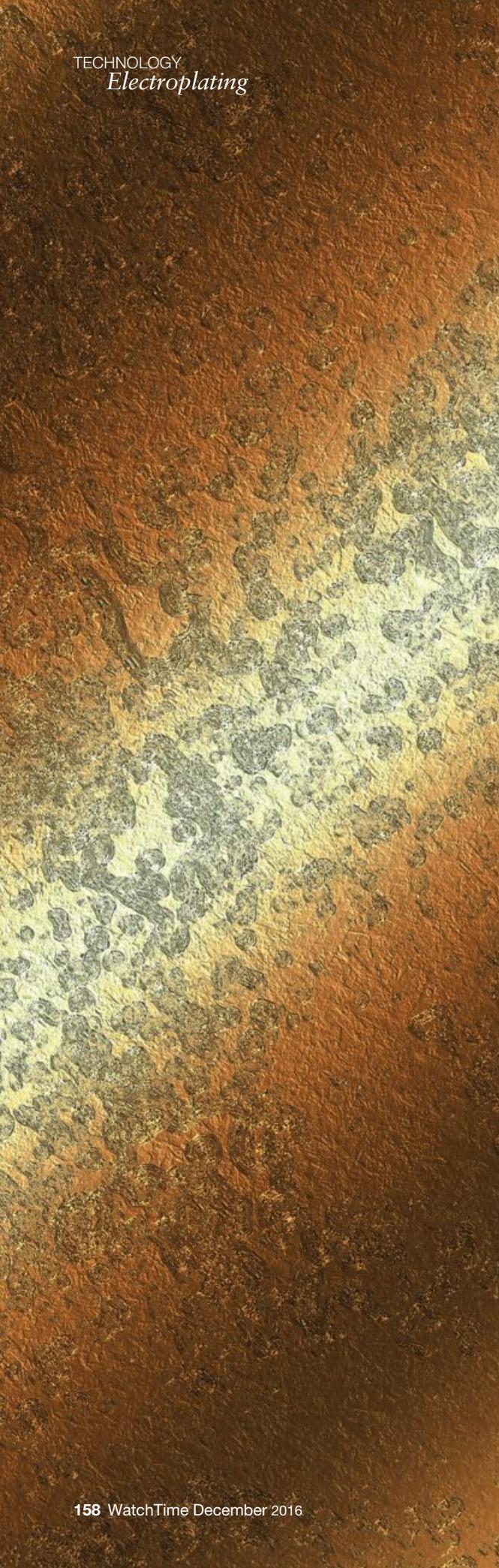
cleaning and multiple rinsing. The final rinse in deionized water ensures spot-free drying. The treated object then has a new, brilliant shine. If no other substances have been added, conventional coatings are relatively soft and sensitive to scratches while also being highly abrasion resistant. Various pretreatments or follow-up treatments are necessary to make this layer of gold durable over the long term. Because of the brilliant color it produces, electroplating technology is desirable for movement components such as main plates, cocks and bridges. Dials may also undergo this treatment to create a special look. Cases and sapphire crystals provide protection for these sensitive parts.

Electroplating is a relatively complicated and costly process. Strict adherence to specific procedures is required when using chemicals in the galvanic baths. And because disposal is expensive, many watch companies employ external specialists for their electroplating needs.

Watch cases and bracelets are the most common components to be treated with a PVD process, but even hands and markers may be given a distinctive color and look.

The Junghans Meister Chronoscope has a gold-colored PVD coating.



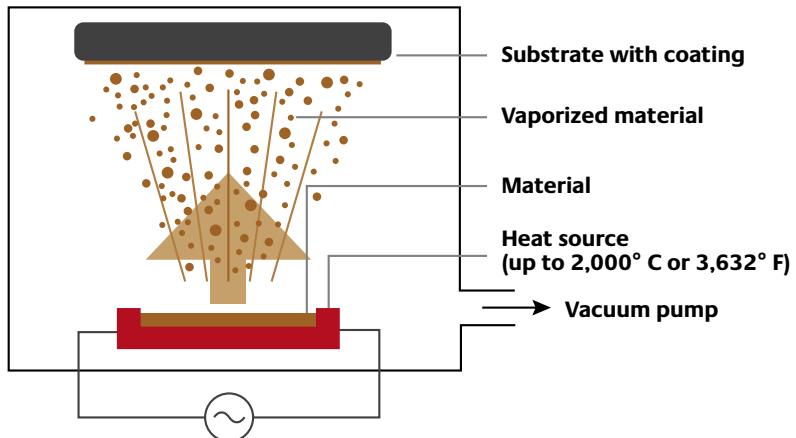


**THE GREAT ADVANTAGE OF
THE PVD PROCESS IS THE WIDE
RANGE OF MATERIALS THAT
CAN BE USED.**

PHYSICAL VAPOR DEPOSITION is called “PVD” and includes vacuum deposition methods such as vaporizing and sputtering. The great advantage of the PVD process is the wide variety of materials that can be used. Hard materials are most often used to make cases and bracelets more resistant to wear and scratching. Because of considerably lower processing temperatures, a variety of synthetic materials can be coated in addition to metals such as stainless steel and titanium. And while galvanic baths require special handling and disposal for environmental and safety reasons, PVD is ecologically safe.

Before using this method, the object must first be cleaned (e.g., in an ultrasonic cleaner). The object is then placed in the PVD coating unit where it undergoes plasma cleaning. Vaporizing and sputtering take place in three stages: transition of the coating material into a gas phase, transportation of the vaporized material to the workpiece, and then condensation and formation of a layer. Each step takes place in a vacuum to reduce the likelihood of contamination with foreign objects.

During the vaporizing process the coating material is heated by introducing energy such as electricity, electrons or a laser beam into the vacuum until atoms are released. These vaporized particles are ionized and accelerated via electrical current to the substrate where they condense and form a layer on the surface. In the case of sputtering, the coating material is usually



In the vaporizing process, heat is used to vaporize the coating material that condenses on the workpiece.

a solid so this process is generally used to create metallic coatings. Unlike vaporizing, the coating material is eluted by pulse transfer rather than with thermal methods, which makes it better suited for more highly temperature-sensitive coating materials. Finally, argon gas is added. When current is applied to the coating material (or “target”) the argon ions are accelerated onto the target and ions are released from its surface. Due to their kinetic energy these “sputtered” atoms land on the substrate where they condense and form a layer.

Like electroplating, PVD coating processes can apply several layers to the substrate. This also allows for the combination of various materials and their different properties.

In addition to the term “PVD coated,” watch cases and bracelets are often designated as “DLC coated.” Diamond-Like-Carbon coatings are applied to cases, bezels and bracelets using a PVD process. DLC coating is extremely hard and resistant to wear.

In addition to the PVD method, Longines also uses the Cap200 process, in which stainless-steel components (like the bezel and bracelet links) are encased with a gold coating. Longines indicates the use of this process with the engraving “GC200” on the caseback. First, a layer of titanium nitride is applied to the stainless-steel case and bracelet to provide protection from scratches and wear. This also serves as a good adhesive base for the next layer of 23.5k gold, which provides a high degree of corrosion resistance. Together, both layers are little more than 0.002 mm thick. Titanium nitride is also yellow gold in color.

Junghans uses no gold in the production of its watches. Instead, the brand uses extremely hard zirconium nitride, another example of “all that glitters may not be gold.” The beautiful shine remains intact – in some cases much longer than pure gold plating. ○

*The Tissot
Le Locle
Regulateur
with a golden
PVD coating*



*The Longines Conquest
Classic Moonphase
features the Cap200
process on its bezel
and bracelet.*



FACEtime



Paul McCallum shows off his Doxa SUB 1500T while snorkeling off Catalina Island with his daughter Julia, who sports an Omega Seamaster.



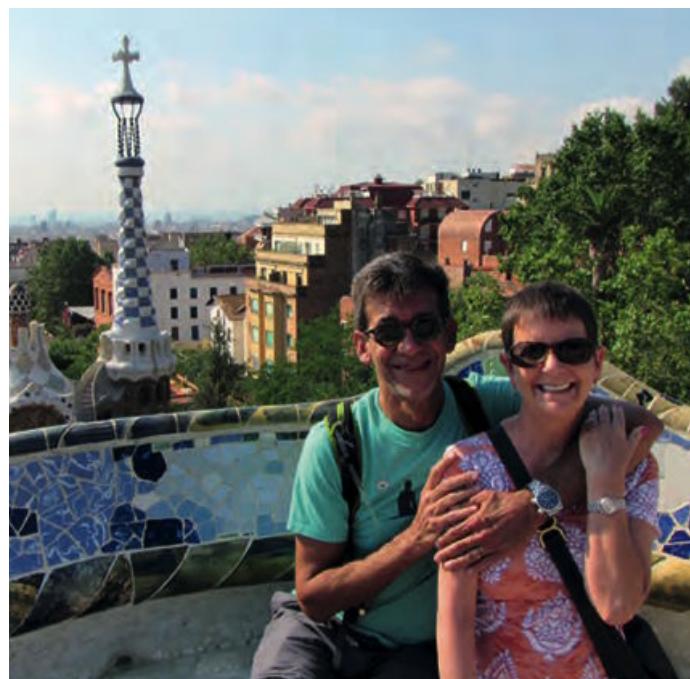
At his wedding to Livia Chan at St. Paul's Basilica in Toronto, Vincent Leung wears a Jaeger-LeCoultre Master Grande Ultra Thin, his best man Peter Poon a Calibre de Cartier, and his groomsmen, David Chen and Kevin Wong, a Ulysse Nardin Marine Chronometer and a Rolex Oyster Perpetual Submariner, respectively.



At a barbecue with friends near San Diego, Calif., Scott Goldman, left, and Tim Jackson sport Ulysse Nardin Maxi Marine Divers. Goldman wears the Black Sea with yellow accents and Jackson the Blue Surf model.

At the Casino de Monte-Carlo before the Monaco Grand Prix, Charles Moore wears a Rolex Submariner while enjoying a martini (shaken, not stirred).

At Antoni Gaudí's Park Güell in Barcelona, Larry Kass wears his Jaeger-LeCoultre Master Compressor Geographic. His wife, Ellen Kass, wears her Chopard Happy Sport Moon and Stars.





At work, Vladimir Vakser, Anatoliy Tatarsky and Dmitriy Perelman wear their Rolex GMT-Master watches.



Facetime Galleries

To submit a photo, please send your image to photo@watchtime.com with a short description identifying each person in the photo and the watch each one is wearing. Please give the first and last name of the wearer and the brand and model of the watch. If the photo was taken at an event, please specify when and where it was held. Only clear images in which the faces of both watch and wearer are visible will be considered for publication. Images must be in JPEG format, no smaller than 1 MB. Only the best-quality and most interesting photos will be considered.

Vacationing in Banff, Alberta, Canada, Jay Vuillemot wears his Rolex Deepsea D-Blue and Julie Vuillemot her sterling silver Must de Cartier tank watch.



On vacation on Paradise Island in the Bahamas, best friends Carrie Dennison, left, and Kerry Eible show off the matching TAG Heuer Links with diamond bezels and hour markers and mother-of-pearl dials that they just purchased.



One Way to Save Switzerland's Independent Parts Producers

Ever hear of Switzerland's Acrotec Group? I hadn't, either. Which is why its acquisition by the Luxembourg private equity investment firm Castik Capital in June did not generate the buzz of, say, the Kering Group's purchase of Ulysse Nardin two years ago. Or much buzz at all, really. Which is too bad, because in terms of importance to the Swiss watch industry, it's a bigger story.

Acrotec is a new phenomenon in Switzerland – a watch group consisting not of watch brands, like the Swatch Group, Richemont, or LVMH, but of watch component makers. Its nine companies produce an array of parts for luxury mechanical watches that they sell to blue-chip Swiss luxury watch manufacturers. Générale Ressorts in Bienne, for example, makes mainsprings and spring barrels. Decovi in Vicques makes oscillating weights and drum barrels. Mu-DEC in La Chaux-de-Fonds makes balances, escape wheels, pallets, and column wheels. Kif Parechoc in Le Sentier supplies shock-resistant parts and assemblies that protect the heart of mechanical movements. And so on for the rest of the group.

The group was created in 2006 by François Billig, the group's CEO. It helped to protect independent parts producers from the two biggest threats to their existence: slumps and vertical integration. The watch component supplier market is fragmented, as the research firm Deloitte noted in a 2013 report on the Swiss watch industry: "Most are small companies with low investment capacity, making them vulnerable to downturns." We saw that in spades in the Great Recession of 2009 when far more suppliers than brands went out of business.

The other threat is vertical integration, whereby watch companies take over their components suppliers in order to guaran-

tee deliveries of parts. Such takeovers have been rampant over the past 15 years in response to the Swatch Group's decision to restrict components sales to brands outside the group. Component producers, however, value their independence. The vast majority do not want to become subsidiaries of their customers. Deloitte found that only 12 percent of component suppliers viewed the vertical integration trend as an "opportunity." Eighty-two percent considered it a "threat." "With many large suppliers being acquired by brands," Deloitte wrote, "it leaves those remaining more dependent on smaller brands, which

SMALL COMPONENT PRODUCERS TAKE A PAGE OUT OF THE BIG-WATCH-GROUP PLAYBOOK.

have lower production volumes and are often less resilient to downturns."

One solution to the vertical integration problem is horizontal integration, i.e., component producers banding together in a single group to leverage their competencies, expand their product range and customer base, and become stronger together than they could ever be on their own.

Billig was CEO of Vardeco, which makes screws and parts for aerospace, automotive, electronics, medical and telecommunications industries. In 2006, he acquired Kif and created Acrotec as an umbrella company for luxury watch components suppliers, as well as suppliers to the other industries. His takeover formula keeps the current management teams in

place and makes them shareholders in the parent company. In 2009, Decovi and Générale Ressorts joined the group. In 2012, Quilvest, a Paris-based private equity firm, became the anchor shareholder in the group with an investment of 30 million Swiss francs. With the acquisition of STS, an electroplating specialist in Le Sentier in 2014, and four more firms this year (Petitpierre, mu-DEC, Precipro in the watch industry and DJC, an automotive parts supplier), Acrotec has more than doubled sales since the Quilvest investment. Today it employs 600 people and has more than 500 customers.

In June, Quilvest cashed out, selling its stake in Acrotec to Castik Capital for SF280 million. "The deal secures the firm's independence and builds the foundation for further strong growth," Castik Capital said in a statement.

Horizontal integration could be the wave of the future for Swiss watch parts suppliers. With the Swiss watch industry suffering its worst slump since 2009 (exports are down 8.8 percent in value through August and the industry unemployment rate has risen to 9 percent), parts producers are on the firing line again. "Due to the ongoing slowdown in the industry, a number of watch component suppliers, which generally suffer more than watch brands and over a longer period, are currently looking at ways to merge," Deloitte notes in its 2016 report on the Swiss watch industry.

Deloitte calls the Castik deal "a landmark transaction, confirming the strong appetite of financial buyers for watch component manufacturers even in difficult times. Financial buyers continue to see this sector as attractive mainly due to the high margins generated and a large number of private equity houses are looking at acquisitions in the sector again this year." ○

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